MOTOR AGE

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No. 10

CHICAGO, SEPTEMBER 7, 1916

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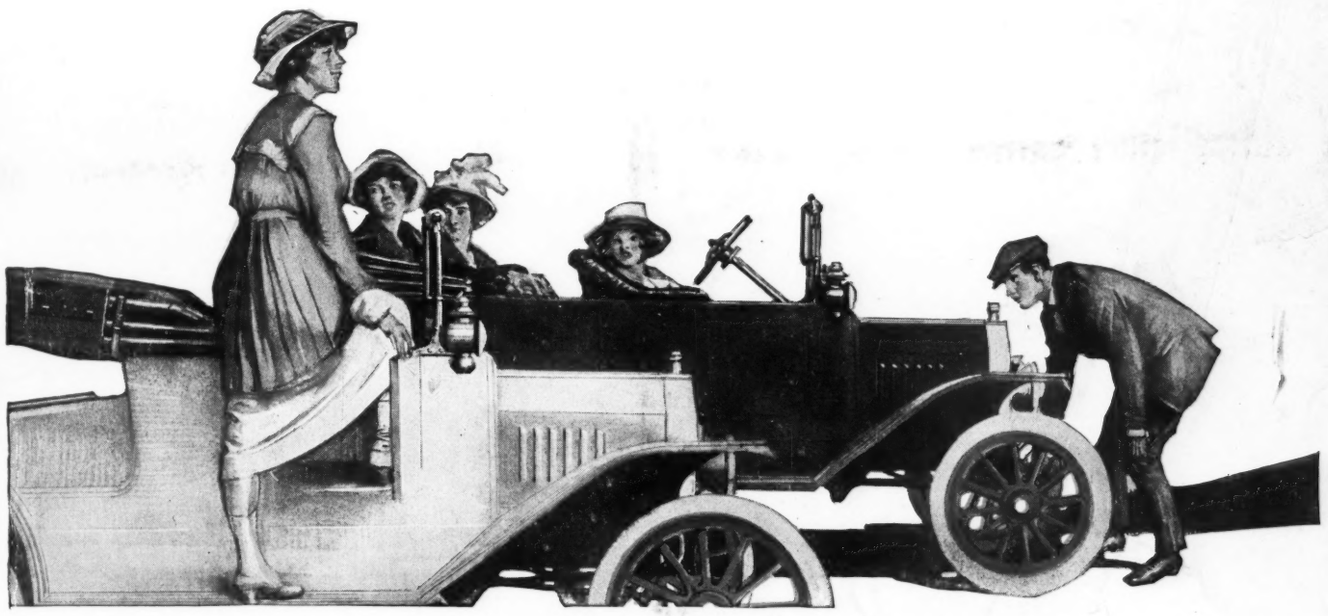

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MOTOR AGE

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ANNOUNCEMENTS

The Harvest racing classic on the Indianapolis speedway September 9 will be a feature of next week's Motor Age. The story will be illustrated and the results accurately tabulated. Another story not to be overlooked is that of the contest between Ford cars on the Chicago speedway September 10.

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There still remain a few concerns in the motor car field who should be advertising, but are not, solely because their idea of the function of advertising is quite wrong. To such concerns our Advertising and Merchandising Service Department would like to be of assistance in the matter of helpful suggestion. Write or pay us a call.

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MOTOR AGE

Aitken, winner of first prize

D'Alene, who took second money

Stars Fall Fast in First Cincinnati Derby

Aitken Wins at 97.06 M. P. H.—Only Six of Twenty-eight Finish Race

HOW THEY FINISHED

Car	Driver	Time	M.P.H.	Prize
Peugeot,	Aitken	3:05:27.22	97.06	$13,000*
Duesenberg,	D'Alene	3:09:56.27	95.01	6,000
Sunbeam,	Galvin	3:17:16.86	91.25	3,000
Duesenberg,	Buzane	3:23:19.06	88.53	1,500
Crawford,	Klein	3:34:15.06	84.01	1,300
Duesenberg,	Devlin	3:46:06.54	79.60	1,200
Kleinart,	Haibe	3:54:53.47	69.11†	1,100

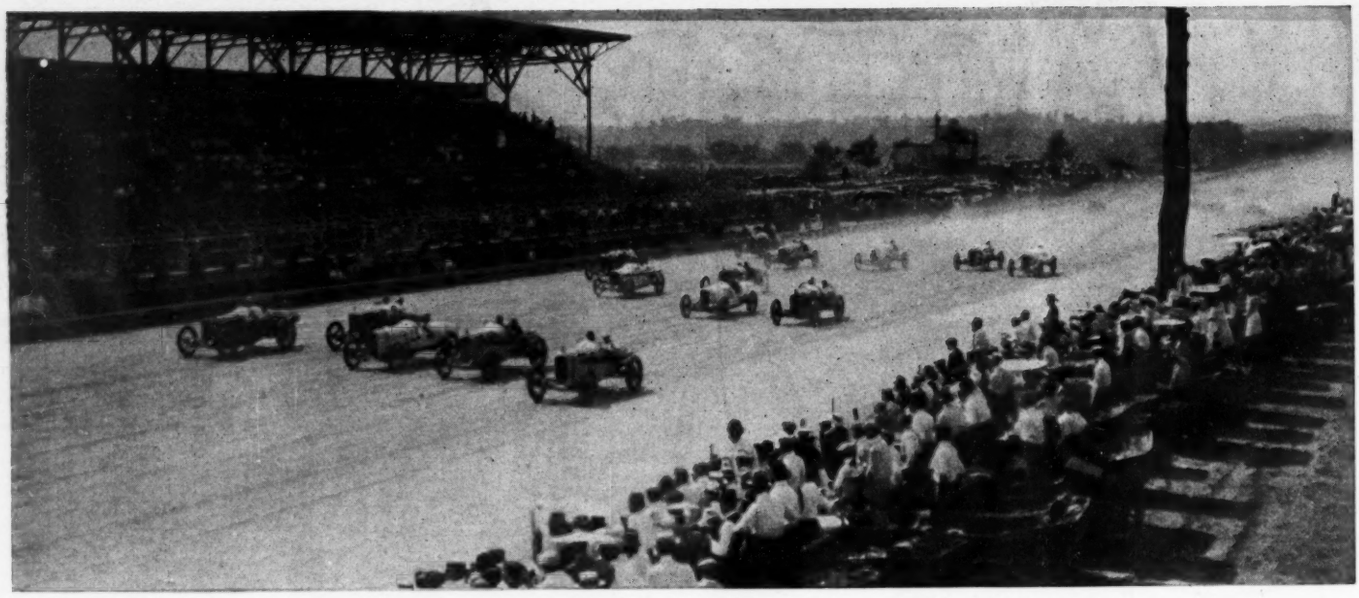
*Includes prize for leading at 200 and 250 miles. †Average for 270 miles.

By William K. Gibbs

CINCINNATI SPEEDWAY, Sept. 4—Minerva closed her eyes today and reached out over Cincinnati's new board oval, trusting to luck and former experience in picking a winner for the first 300-mile speedway race in Ohio. At her feet were prizes for ten drivers, but she grasped but seven of the twenty-eight before her and there was no alternative—she could draw but once. Out of the handful she chose, first honors went to Johnny Aitken and his Peugeot, while D'Alene in a Duesenberg, carrying hoodoo No. 13, was her second choice.

Cincinnati's first race will go down in history as one in which drivers were blinded as to the ability of their cars by the fast appearance of the track. For the first 100 miles the leaders were turning laps at well over the century mark and by the time the race was one-third over, eight cars, or a little less than one-third of the starters, were eliminated. The next century saw nine more fall, although the pace had slackened somewhat by this time. Seventeen of the twenty-eight cars qualified at speeds ranging from 100 to 111 miles per hour and the field was over-confident when the race was on.

Resta, de Palma and Aitken where the only three that showed the way to the field at one time or another. Runners-up changed frequently. As soon as de Palma dropped, Aitken jumped into second, followed close by Mulford in a Peugeot, so that Peugeots were running one-two-three. Wilcox courted third place for a while until his Premier went out at 94 miles.



Flying start in Cincinnati's first 300-mile race. Twenty-eight cars faced the starter, but only six finished, winner of seventh place being flagged at 270 miles

Dario Resta, the seemingly perpetual winner this year, met his Waterloo today when the water in his radiator refused to work, quitting at 288 miles, when four stops at the pits and slow running had dropped him into third position. This is the seventh race in which Resta has been entered this year, out of which he has won five.

Aitken's time for the 100 miles was 3 hours, 5 minutes, 27 seconds, and his average was 97.06 miles per hour, somewhat under the mark expected of today's winner. An American car, D'Alene's Duesenberg was the second to cross the tape, the time being 3 hours, 9 minutes and 56 seconds. Frank Galvin's Sunbeam finished third in 3 hours, 17 minutes and 16 seconds, while George Buzane, in a Duesenberg, was fourth in 3 hours, 23 minutes, 19 seconds. Art Klein in a Crawford was fifth; time, 3 hours, 34 minutes, 15 seconds. Devlin finished sixth in a Duesenberg in 3 hours, 46 minutes and 6 seconds. Haibe's Kleinart was flagged at 270 miles and given seventh money, being the only car running at that time, although there were 10 prizes to compete for.

Anderson's Stutz Wrecked

Bad luck marked the re-entry of Gil Anderson's Stutz into racing. After finishing 168 miles and while running in eighth place he struck a part of a tire tread that had been cast a few minutes previously on the turn coming into the homestretch. The rear end of the Stutz was seen to swing to the right, describe a complete circle and then as the right rear tire gave away the car went up a 10-foot bank on the inside of the course, looped the loop and after turning over four times landed bottom side up and spun around like the handle of a coffee mill. Anderson was thrown out on the second turn over, and his mechanic, Bert Shields, was catapaulted over the fence and into the crowded motor cars parked around the course. Anderson suffered a compound fracture of his left leg and many cuts and bruises, while Shields has a broken back, and as this is being written at midnight, he is paralyzed from his fifth ribs down. It is said there is no hope of his recovery. Anderson is resting easy and reported out of danger.

Resta took the lead in the first lap, closely followed by de Palma, and while the Mercedes lasted these two rivals fought for position. Dario was headed by Ralph at the end of 8 miles and held this position two laps, then gave way to Resta for one lap, taking the lead again for three laps. Then Resta took the lead at 20 miles, de Palma going out with a broken connecting rod at the end of 22 miles and Aitken moving up to second place. Mulford's Peugeot was third and Wilcox's Premier fourth at the end of the twenty-eighth mile.

Resta and Aitken ran one-two until 165 miles was reached, then Aitken took the lead and held it until the finish, although there were times when his margin was very narrow. By the time 200 miles were reached Resta had dropped to third place. D'Alene holding second. There was a constant fight between Resta and D'Alene for second place, reversing once or twice every twenty miles until Resta went out at 288 miles with an overheated motor due to a balky radiator. Resta made four stops, but only changed one tire, which shows how his car was going.

Early Speed Terrific

With a field of twenty-eight cars it is surprising that so few finished. The speed during the early part of the race was around 105 miles per hour, but the terrific pace told on motors and tires. One by one cars dropped out, the majority of them

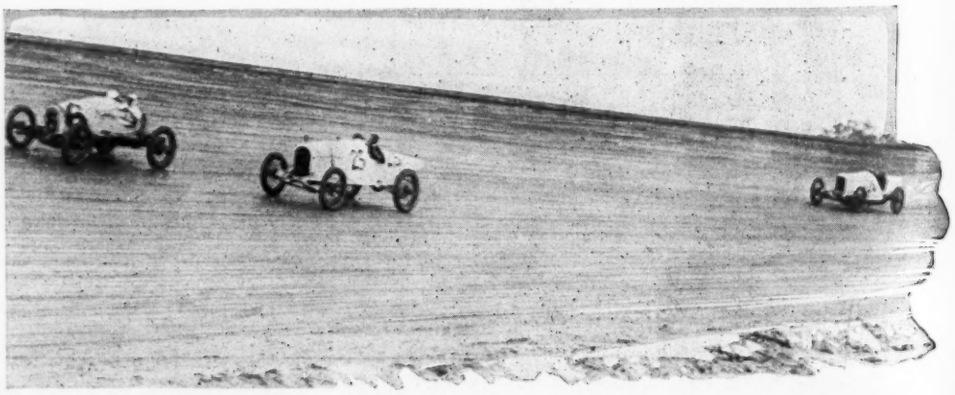
Times of Contenders

Mi.	Aitken	D'Alene	Galvin	Resta
		Time		
20	12:07	12:31	12:24	11:39
40	23:43	26:12	26:12	23:30
60	36:23	37:35	37:55	35:26
80	48:13	50:04	49:52	47:26
100	1:00:15	1:02:34	1:03:03	59:32
120	1:12:10	1:15:02	1:15:15	1:11:42
140	1:24:08	1:27:32	1:28:31	1:23:56
160	1:38:01	1:39:59	1:40:40	1:36:20
180	1:49:58	1:52:22	1:52:54	1:50:04
200	2:04:19	2:04:46	2:07:42	2:05:88
220	2:14:50	2:17:46	2:20:35	2:17:34
240	2:27:35	2:31:35	2:35:01	2:31:57
260	2:40:08	2:44:23	2:51:37	2:44:15
280	2:52:50	2:57:01	3:04:27	2:59:18
300	3:05:27.22	3:09:56.27	3:17:16.86	Out 288 mi.

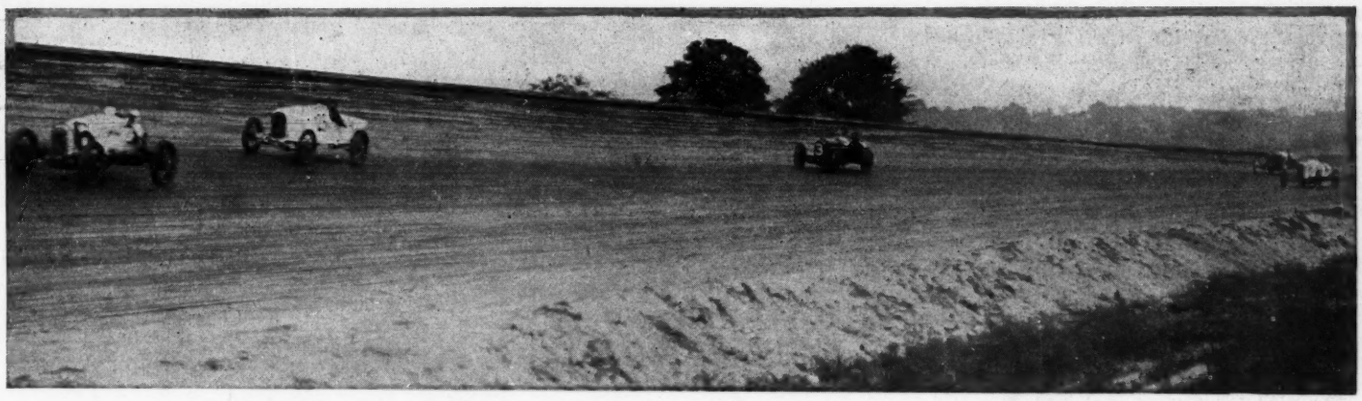
Finish Times of Other Cars

Buzane ....3:23:19.89 Devlin 3:46:06.54
Kline .....3:34:15.06 Haibe 3:54:53.47*

* Flagged at 270 miles.



Toft's Omar, Vail's Hudson and Devlin's Duesenberg in a brush on the east turn



Omar and Hudson closely followed by Merz's Peugeot during early part of race

with broken rods, or burned bearings, which seems to indicate that the track is faster than the cars could stand. Nine cars had not made any stops until they went out. As to tires, the track seemed fairly easy, only thirty casings having been changed, or an average of a little over one to each car starting.

Buzane, who took fourth money, was a surprise. He was a last-minute qualifier. His Duesenberg car was wrecked in Kalamazoo a week ago and it was only by night and day work that he got it rebuilt. He reached the track at noon Sunday, fitted a new block on his motor and qualified late in the afternoon just before the final limit given.

Anderson Worked All Night

It is felt that Anderson's accident might not have happened had he had sufficient rest. He burned out a center crankshaft bearing in practice Saturday and had to go to Indianapolis to get another. He practically tore his car down last night and worked on it nearly until daylight.

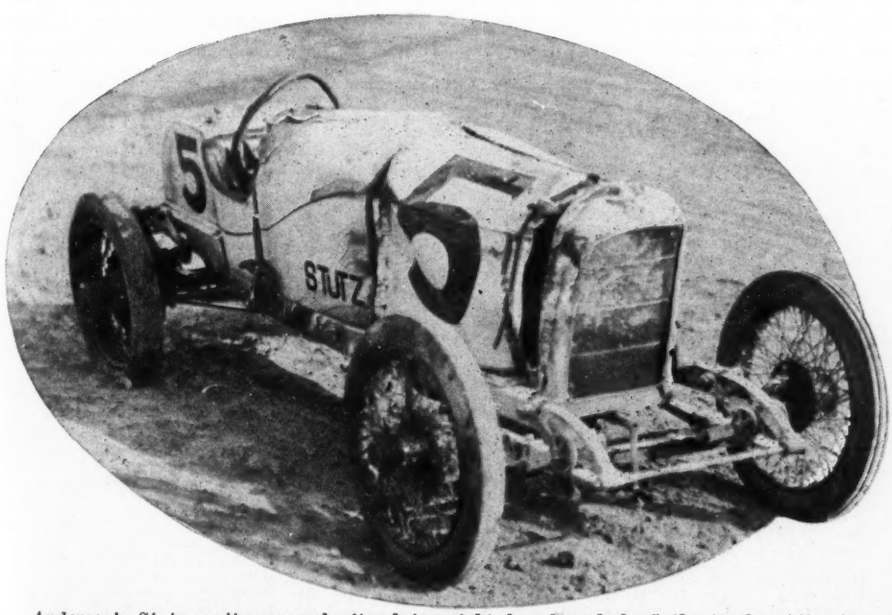
Aitken won $12,000 and an extra $1,000 for leading at 200 and 250 miles. Resta got the Gibson trophy given by the Hotel Gibson for being first at 50 miles and $500 for being first at 100 miles. Galvin won $3,000; Buzane, $1,500; Klein, $1,300; Devlin, $1,200 and Haibe, $1,100. Haibe was overcome by the heat and Art Klein relieved him after having finished in a Crawford, thus finishing two cars in one race.

Notes on the Race

WHEN Fred Wagner started the drawing for starting positions he announced that D'Alene had asked for No. 13 and had been given permission to use it. Tom Alley protested that No. 13 would hoodoo the race and pleaded that Wagner reconsider. Finally he waxed peevish and offered a wager of $25 to $5 that D'Alene would not finish. D'Alene's winnings were $6,000, plus Tom's $25.

Today marked Dave Lewis' first race as a member of the Premier team, having taken Gil Anderson's Premier when Gil switched his allegiance back to his previous love—the Stutz.

The Crawfords looked somewhat the worse for wear due to the Kalamazoo wreck. Only by almost constant day and night work was it possible to get them ready for today's meet. Nevertheless one of them finished fifth.



Anderson's Stutz as it appeared after being righted and pushed off the track. After its spectacular somersault it landed on the track bottom side up and spun around several times

At 1:30, when the race began the stands were well filled and the bleachers about half full. In the infield were probably 2,000 cars and all told there were approximately 30,000 who saw Cincinnati's first speedway event. Fred Wagner started the cars away in groups of five, positions having been allotted by drawing, qualifying speeds not being a criterion of where a driver would line up for the getaway. Thus, Resta, who usually has the pole, was on the outside in the first row. The positions were:

First row—Wilcox, Premier; Lewis, Premier; Milton, Duesenberg; Franchi, Delage; Resta, Peugeot.

Second row—Mulford, Peugeot; Devlin, Duesenberg; Alley, Hoskins, de Palma, Mercedes; Lecain, Delage.

Third row — Rickenbacher, Maxwell; Toft, Omar; Muller, Dans l'Argent; Rawlings, West Duluth; Merz, Peugeot.

Fourth row—Anderson, Stutz; Henderson, Maxwell; D'Alene, Duesenberg; Aitken, Peugeot; Chevrolet, Frontenac.

Fifth row—Christiaens, Sunbeam; Vail, Hudson; Galvin, Sunbeam; Chandler, Crawford; Klein, Crawford.

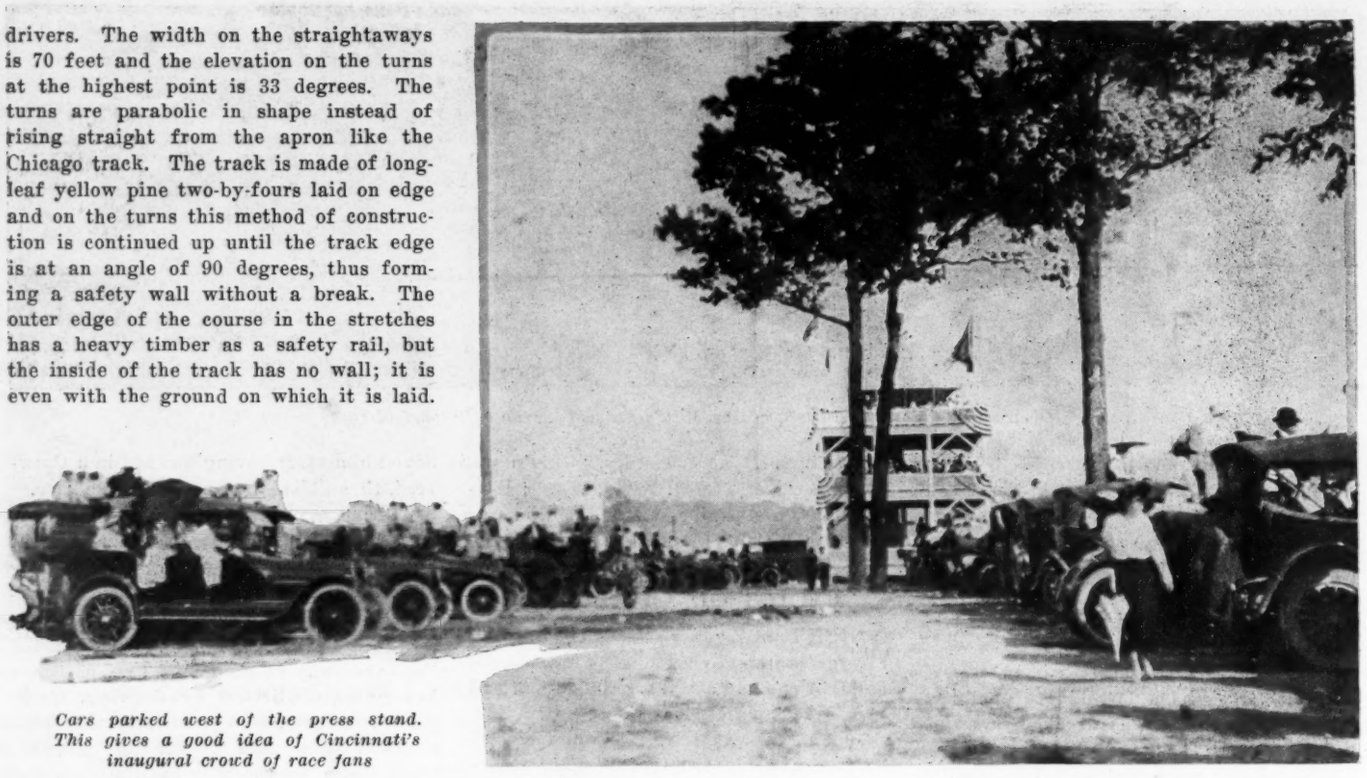
Sixth row—Buzane, Duesenberg; Moore, Crawford; Haibe, Kleinart.

Fans Are Enthusiastic

Cincinnati's interest in its new speedway seemed at fever heat. During the 3 days of practice and eliminations a big crowd was present, Sunday's attendance being about 8,000. Drivers participated in the receipts for each day. The Cincinnati speedway has one of the most attractive locations of any of the big ovals. It is situated in a valley with rich farming country on all sides and is reached by several routes out of the Queen City, all of which are good. Besides, the Pennsylvania tracks are at one end of the course and the Big Four at the other. Both are double track and stations have been built to handle race crowds. While the track is about 15 miles from the heart of the city, transportation facilities and roads leading to it are better than the average to a speedway.

The course is not so fast as New York or Chicago, according to the majority of the

drivers. The width on the straightaways is 70 feet and the elevation on the turns at the highest point is 33 degrees. The turns are parabolic in shape instead of rising straight from the apron like the Chicago track. The track is made of long-leaf yellow pine two-by-fours laid on edge and on the turns this method of construction is continued up until the track edge is at an angle of 90 degrees, thus forming a safety wall without a break. The outer edge of the course in the stretches has a heavy timber as a safety rail, but the inside of the track has no wall; it is even with the ground on which it is laid.



Cars parked west of the press stand. This gives a good idea of Cincinnati's inaugural crowd of race fans

Evidences of hasty construction are seen in the track surface, which drivers say is rougher than other tracks of this size, with the possible exception of Minneapolis. The superstructure of the turns is wood, as is the grandstands, and the spaces between the two-by-fours are from ⅛ of an inch to ¾ of an inch wide. Whether these will close up with wet weather, or shrink when they become seasoned, is a matter that it is too early to predict at this time.

High Speed Breaks Up Cars

Track Easy on Tires But Effort to Maintain Qualifying Pace Puts Motors Out

CINCINNATI SPEEDWAY, Sept. 4—Because they overestimated the ability of their cars to maintain qualifying speeds, twenty-one drivers docked their cars in today's race. Eight cars went out by the time the 100-mile mark had been reached, nine more in the second century, and four more at intervals during the last 100 miles.

Pit crews were efficient and tire changes were rapid in the majority of cases. D'Alene made his only change in 15 seconds and Aitken's quickest change was 18 seconds. Thirty tires in all were sent to the scrap heap, seventeen of these being on the cars that finished.

Klein First at Pits

Klein brought his Crawford into the pits 12 minutes after the start for a right front casing, being followed close by Chevrolet, who brought his Frontenac in for a tire and water, stopping 41 seconds and then stopping again on his next lap to tighten a rocker arm, the same one that eventually put him out of the running when it broke. Christiaens was the first to dock his car, being out with a seized clutch. De Palma followed him a few minutes later, pushing his car in from the turn into the homestrech when a connecting rod let go.

Mulford went out at 98 miles with a broken valve and Resta pulled in for gas and oil 1 hour and 40 seconds after his start. Aitken, who had been crowding him close, jumped into the lead and Dario gradually dropped back until the 288th mile, when he withdrew rather than attempt to finish and run chances of over-

Pit Stops, Tire Changes and Mileage Made

Car	Driver	Stops	Tires	Mileage	Out
Sunbeam	Christiaens	0	0	30	Seized clutch
Peugeot	Resta	4	1	288	Radiator trouble
Peugeot	Merz	0	0	84	Burned bearing
Premier	Wilcox	0	0	94	Broken oil pump
Stutz	Anderson	3	2	168	Wrecked
Omar	Toft	1	1	168	Stuck valve
Crawford	Klein	2	2		Finished
Crawford	Chandler	2	0	196	Broken rod
Mercedes	De Palma	0	0	22	Broken rod
Peugeot	Aitken	2	2		Finished
Maxwell	Rickenbacher	3	1	216	Engine trouble
Duesenberg	D'Alene	1	1		Finished
Maxwell	Henderson	0	0	142	Engine trouble
West Duluth	Rawlings	1	1	264	Stuck valve
Delage	Franchi	0	0	138	Broken rod
Kleinart	Haibe	9	5		Flagged
Delage	Lecain	0	0	104	Burned bearing
Sunbeam	Galvin	6	5		Finished
Dans l'Argent	Muller	1	1	194	Burned bearing
Duesenberg	Milton	0	0	32	Broken pump connection
Duesenberg	Buzane	1	1		Finished
Hudson	Vail	2	0	152	Broken rod
Duesenberg	Devlin	4	1		Finished
Hoskins	Alley	5	4	230	Broken rod
Premier	Lewis	1	1	162	Broken water connection
Peugeot	Mulford	1	0	98	Broken valve
Crawford	Moore	0	0	64	Broken rod
Frontenac	Chevrolet	3	1	40	Broken rocker arm
Total		52	30		

Anderson's Stutz pulled on to the course and took its place at the pits a few minutes before the start, having been torn down the night before. Mechanics are shown putting on finishing touches. Anderson is at the extreme right with his back turned. Chevrolet is passing him

Equipment Used in First 300 Mile Cincinnati Race Labor Day, September 4, 1916

No.	Car	Driver	No. Cyl.	Bore	Stroke	Dis.	Carb.	Plugs	No. Plugs	No. Valves	Valve Oper.	Tires Make	Tires Size	Tires WB.	Pistons	Oil
1	Sunbeam	Christiaens	6	3.28	6.14	294.2	Miller	K L G	6	24	Over	Silvertown	35x5	113	Alum. Al.	Castor
2	Peugeot	Resta	4	3.70	6.65	274.9	Miller	K L G	4	16	Over	Silvertown	35x5	100	Aloynium	Oilzum
3	Peugeot	Merz	4	3.70	6.65	274.0	Zenith	K L G	4	16	Over	Goodyear	35x5	106	Aluminum	Castor
4	Premier	Wilcox	4	3.65	6.63	274.5	Miller	K L G	4	16	Over	Goodyear	35x5	105	Magnalium	Oilzum
5	Stutz	Anderson	4	3.81	6.50	293.8	Stromberg	Bosch	8	16	Over	Silvertown	33x5	102	Aluminum	Oilzum
6	Omar	Toft	4	3.75	6.75	298.2	Miller	Rajah	8	16	Side	Goodyear	35x5	106	Magnalium	Oilzum
8	Crawford	Klein	4	3.75	6.75	298.2	Miller	Rajah	8	16	Side	Silvertown	34x4½	106	Aluminum	
9	Crawford	Chandler	4	3.75	6.75	298.2	Zenith	Rajah	8	16	Side	Silvertown	33x5	106	Aluminum	
10	Mercedes	De Palma	4	3.70	6.49	278.0	Mercedes	Eiseman	8	16	Over	Silvertown	33x5	114	Leavitt	Monog'm
11	Peugeot	Aitken	4	3.65	6.65	274.0	Zenith	K L G	4	16	Over	Goodyear	35x5	106	Aluminum	Castor
12	Maxwell	Rickenbacher	4	3.75	6.75	298.2	Miller	K L G	4	16	Over	Goodyear	35x5	106	Aluminum	Oilzum
13	Duesenberg	D'Alene	4	3.75	6.75	298.2	Miller	Rajah	8	16	Side	Silvertown	35x5	106	Magnalium	Oilzum
14	Maxwell	Henderson	4	3.75	6.75	298.2	Miller	K L G	4	16	Over	Goodyear	35x5	106	Aluminum	Oilzum
15	West Duluth	Rawlings	4	3.75	6.75	298.2	Miller	Rajah	8	16	Side	Silvertown	33x4½	106	Magnalium	Oilzum
16	Delage	Franchi	4	3.70	6.29	267.9	Delage	K L G	4	16	Over	Silvertown	34x4½	106	Steel	Castor
17	Kleinart	Haibe	4	3.98	5.00	247.0	Miller	Rajah	8	8	Side	Nassau	33x4½	99	Magnalium	Monog'm
18	Delage	Lecain	4	3.70	6.29	267.9	Delage	Rajah	4	16	Over	Silvertown	34x4½	106	Steel	Castor
19	Sunbeam	Galvin	6	3.28	6.14	294.2	Claudel	Rajah	6	24	Over	Silvertown	35x5	113	Alum. Al.	Castor
21	D. l'Argent	Muller	6	3.50	5.00	288.0	Hudson	Rajah	6	12	Side	Silvertown	34x4	102	Magnalium	Castor
22	Duesenberg	Milton	4	3.75	6.75	298.2	Miller	Rajah	8	16	Side	Silvertown	34x4½	106	Magnalium	Oilzum
24	Duesenberg	Buzane	4	3.75	6.75	298.2	Miller	Rajah	8	8	Side	Silvertown	33x5	106	Aluminum	Castor
25	Hudson	Vail	6	3.50	5.00	288.0	Hudson	Rajah	6	12	Side	Silvertown	35x5	105	Magnalium	Castor
26	Duesenberg	Devlin	4	3.75	6.75	298.2	Miller	Answer	8	16	Side	Silvertown	33x5	106	Magnalium	Oilzum
28	Hoskins	Alley	4	3.75	6.75	298.2	Miller	Rajah	8	16	Side	Silvertown	34x4½	106	Aluminum	Monog'm
29	Premier	Lewis	4	3.65	6.63	274.5	Miller	K L G	4	16	Over	Silvertown	35x5	105	Magnalium	Oilzum
31	Peugeot	Mulford	4	3.65	6.65	274.0	Zenith	Rajah	4	16	Over	Silvertown	35x5	110	Magnalium	Oilzum
32	Crawford	Moore	4	3.75	6.75	298.0	Miller	Rajah	8	16	Side	Silvertown	34x4½	106	Aluminum	
39	Frontenac	Chevrolet	4	3.87	6.38	300.7	Miller	Rajah	8	16	Over	Silvertown	33x4½	103	Lynite	Castor

All used Moto-Meters and all cars were equipped with Hartford shock absorbers, except de Palma, who used Mercedes. All used Bosch ignition except Vail and Muller, who used Delco, and Galvin, who was Thomson equipped. R.-W. wheels for all except Anderson, Rickenbacher and Henderson, who used Houk.

Pits, infield and grandstand and spectators. D'Alene is at the pits, his only stop

heating his motor. From his first stop until he withdrew, his radiator did not work properly and his car did not seem to have the usual stamina that has come to be so well known.

Galvin made five tire changes in a total of 3 minutes and 44 seconds, while Haibe used the same number of casings, but stopped nine times for a total of 12 minutes. Buzane made one stop of 1 minute and 40 seconds, changing a right rear and taking oil, gas and water.

Only one driver, Rickenbacher, had occasion to change plugs, so it cannot be said that ignition caused much difficulty; in fact, the ignition problem seems to be better in hand now than at Indianapolis this year when the majority of the pit stops were for changing plugs.

The total number of stops, tires used, mileage and reason for going out are shown in the table on page 8.

Buzane and D'Alene, both driving Duesenbergs, had one stop apiece chalked against them, which is the least of any of the cars finishing.

MILLER BUILDS OLDFIELD'S CAR

Santa Monica, Cal., Sept. 6—The secret concerning the car which Barney Oldfield will drive in the Vanderbilt Cup and International Grand Prize races to be held at Santa Monica, November 16 and 18 has leaked out and the veteran was responsible for the leak.

Oldfield will drive a car to be constructed in Los Angeles from parts of his old Delage and a new motor to be built by Harry Miller, the motor car engineer of Los Angeles. Just what the car will be called, Oldfield has not decided.

The new motor will resemble closely the one which Harry Miller is building for Tom Alley in his new car which will make its first appearance in the cup classics. The innovations will include oil and gas lines cast integral with the crankcase, overhead camshaft, sixteen valves and all working parts inclosed. Several parts of the old Delage such as axles and frame will be used in the new distance annihilator.

PROVIDENCE RACE RE-CARDED

Providence, R. I., Sept. 1—As a result of a visit here a few days ago of Eddie Rickenbacher, F. H. Perkins, owner of the Narragansett Park speedway has decided to go on with the race meet scheduled for September 16. He had decided to give it up a short time ago because there was no certainty that the big drivers would come to Providence. Rickenbacher had written Mr. Perkins about the race and when the driver learned that it was in doubt he made the hurried trip East. As Eddie had won the race last year he felt that it would increase his average for the big prizes if he won again so he told Mr. Perkins that he would arrange to bring de Palma, and some of the other big drivers here. The Bay State A. A. of Boston, has voted to aid the event.

Giant's Despair Climb

Wilkes-Barre Automobile Club Asks A. A. A. for Sanction

Ten Events Scheduled for Stock and Non-Stock Cars

NEW YORK, Sept. 6—The Automobile Club of Wilkes-Barre, Pa., has requested the American Automobile Association contest board for a sanction for a hill climb up Giant's Despair mountain just outside the city of Wilkes-Barre for October 7. According to present tentative plans there will be ten events, seven for stock cars and three for non-stock machines. This possibility of reviving this hill climb is a good indication of the increased interest in hill climbs. With Pike's Peak in the Rocky Mountain district and Giant's Despair in the East the nucleus is formed for a series of hill climbs which should greatly assist the speedways in maintaining interest in motor car events.

FORD RACE POSTPONED

Chicago, Sept. 4—The Ford race scheduled for today at the Chicago speedway has been postponed until next Sunday, September 10. The race is open to Ford cars only with non-professional drivers, and there are five separate events of 10, 20, 30, 40, and 50 miles, respectively. This is the fourth of six contests at the Chicago speedway which have had to be postponed.

In practice, Monday morning some of the entrants had marked up good time, the best being made by Paul Harvey, of Oak Park, who was unofficially clocked on a 2-mile lap in 1:51 or 80 miles an hour. According to the promoter fifty-five were ready to line up at the start. These, and possibly more, will be in line for next Sunday's race. The only withdrawal is that of Ed. Kulick, of Detroit, brother of Frank Kulick, of "Ford 999" fame, who had to report at work at his place of employment in Michigan. Most of the mounts will be stored at the track until Sunday.

19 CARS FOR HOOSIER RACE

Indianapolis, Ind., Sept. 5—Entries for the harvest racing classic to be held here Saturday, September 9, closed yesterday, and today an official list of nineteen entries were given out. Gil Anderson, who was to drive his recently purchased Stutz in the speedway events, is out on account of his accident in the Cincinnati race, Labor Day. Resta's name will be missing also, as he failed to enter as expected.

De Palma has asked that the name of his car be withheld. Just what car he will drive is unknown as the Mercedes, which failed him Monday at Cincinnati, is so disabled as to be practically useless for some weeks, unless he can install a new motor. With de Palma, Aitken ranks high as a favorite since he won the big 300-mile opening event at Cincinnati.

The Burman special, entered by Erbes with Gable as driver, is the Peugeot in which Burman met his death at Corona. Since that time the car has been rebuilt and driven in several races. It belongs to Burman's heirs, and a large percentage of its winnings goes to the owners. The Erbes' car is said to be modeled after the Burman special. Howard Marmon will be referee.

The official list of entries follows:

Car	Driver
Not Named	de Palma
Dans L'Argent	Muller
Hoskins Special	Not Named
Rawlings	Not Named
Omar	Toft
Peugeot	Aitken
Peugeot	Merz
Ostewig Special	Ostewig
Sunbeam	Christiaens
Premier	Lewis
Premier	Wilcox
Maxwell	Rickenbacher
Duesenberg	Buzane
Sunbeam	Galvin
Maxwell	Henderson
Duesenberg	Milton
Duesenberg	D'Alene
Burman Special	Gable
L. C. Erbes	Klein

MAXWELL PRODUCTION RECORD

Detroit, Sept. 5—A record was made by the Maxwell Motor Co. on August 26 when 532 cars were turned out by the big plants here. The previous record was made only the day before, when 501 cars were turned out. The average production of the big Oakland avenue assembly plant is now about 400 cars per day, as compared with a maximum daily output 1 year ago of about 200 machines.

All Maxwells are assembled here, while most of the parts are manufactured in the concern's factories at Dayton and New Castle, Ind. These are now making for the Detroit factory some 400 units daily, to keep pace with production. It is stated that the 1916-1917 year will see 120,000 Maxwells built, as compared with 60,000 for the year just ended.

LEADS IN SEVEN-SEATER OUTPUT

Detroit, Mich., Sept. 1—During the past 14 months the Studebaker corporation led the industry in the production and sale of seven-passenger cars. In that period 70,000 Studebaker seven-passenger cars were built and shipped.

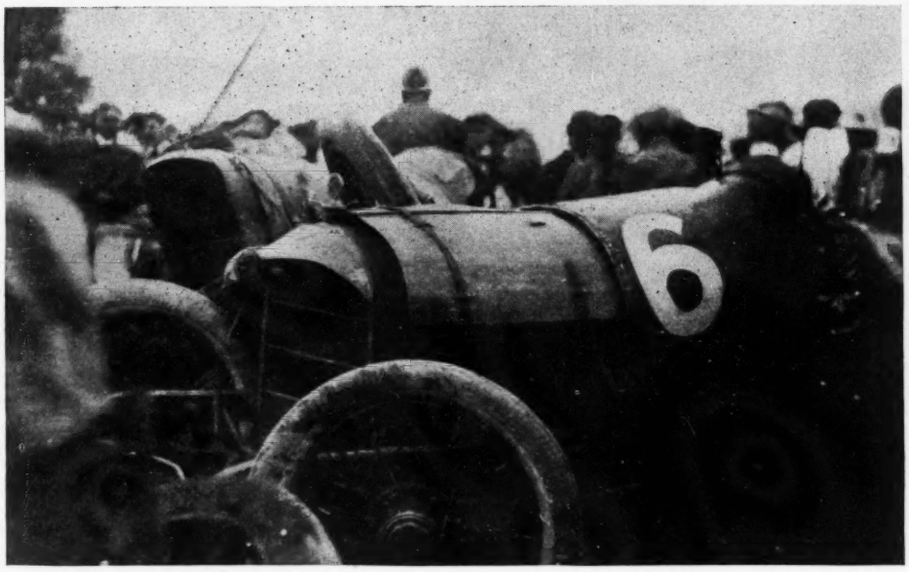
Studebaker business has shown a 100 percent increase during the past year, and production at present is at the rate of 100,000 cars annually. This will show a gain of 60 percent over the output of last year, which up to that time set a new record for Studebaker.

NEW DELAWARE COMPANY

Wilmington, Del., Sept. 4—The Gooden Realty Co., of this city, announces the sale of 12 acres of land on the Delaware river at Grubb's Landing to the Victor Motor Co. for a factory site for the manufacture of motor cars. The factory is to have a capacity of 50,000 cars a year and turn out a new model at a moderate price.

Kalamazoo Wreck Blame Uncertain

Order of Start, Lack of Differential and Dust Probably Responsible for Fatal Accident



Sunbeam locked with Cino. Lewis' Crawford in background

CHICAGO, Sept. 1—Exact details of the fatal accident which ended the race at Recreation Park, Kalamazoo, Aug. 27, probably never will be known. The accident occurred at the outset of the annual 100-mile race which promised to furnish the speed fans plenty of legitimate thrills instead of the bedlam of horror that it turned out to be.

Eleven cars out of the fourteen running piled up, killing three and injuring eight others as recounted in Motor Age of last week. An inquiry was held by the coroner and sheriff but little definite headway was made toward placing the real blame for the tragedy as all of the witnesses who were able to testify were conflicting in their reports.

Root of the Trouble

So far as may be ascertained, the root of the trouble was due to two facts; one that the Sunbeam, with its long wheelbase, lack of differential and great speed possibility, could not be held on the sharp turns of the track; and, second, that the cars were started in the order of entry it so happened that the slower cars were in the first rows, instead of starting them with the fastest cars first. All the drivers were fearful of what the Sunbeam and its long wheelbase and lack of differential would do on the turns and pleaded with Peacock to withdraw the mount; he would not and there was no definite rule upon which the A. A. A. representative, W. D. Edenburn, could rule the car out.

It was endeavored to alter the order of the start from the order of entry as provided in the entry blanks, but under the A. A. A. rules this would be impossible without obtaining the consent of all the drivers. Four drivers, most of them of slower cars, refused to consent to placing the faster cars first.

The field got away to a false start, a number of the cars getting out of position for the flying start. They were flagged and started the second time, and on rounding the first curve the Sunbeam was seen to hurdle into the air and turn over. It was about the ninth car at the curve, the others being strung out from a quarter to a half ahead of it when the accident came.

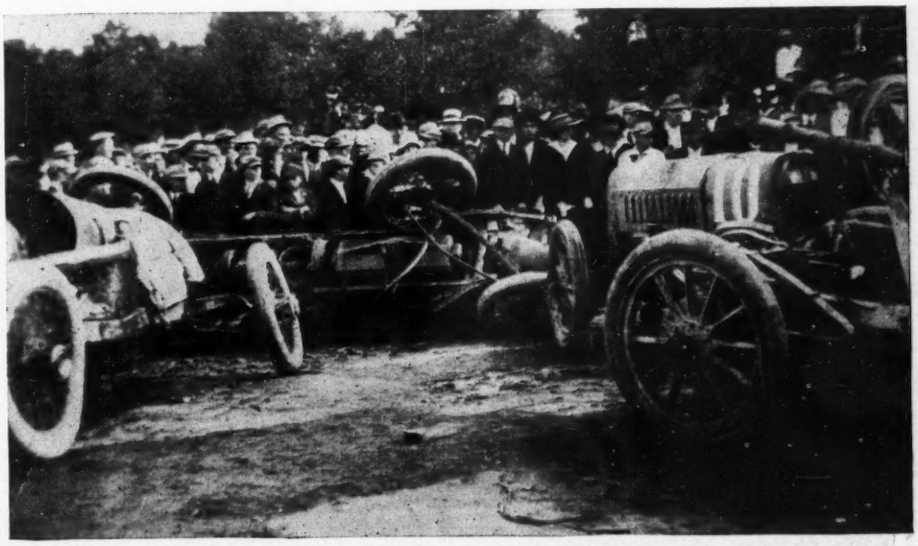
In the maze of conflicting reports, there is no knowing of the exact sequence of events, but it is believed the beginning of the difficulty came when two cars, one of which was the Chalmers, running side by side, locked together on the first lap and stopped on the track a little to the outside. Behind them came Buzane and Adams, side by side. In the endeavor to avoid hitting the two stalled cars, Adams swung abruptly, striking Buzane and driving him into the iron guard rail. At this instant Peacock's Sunbeam skidded into the turn and struck Buzane's car. This threw the Sunbeam across the track and overturned it. In the meantime, the balance of the cars made a complete lap, but stayed close to the pole, being unable to know, on account of the thick dust, that there was trouble on the track.

On the second lap the remaining cars, except six, ran one after another into the wreck of the Sunbeam. Two of the six, the Ostewig and Chandler's Crawford, avoided striking the pile-up by running into the outside fence, having been directed there by the surviving drivers.

Calcium chloride had been applied to the track previous to the race for the purpose of keeping down the dust, but according to a number of drivers, the dust was quite bad. Two drivers stated that it was impossible to see more than 15 feet on the turn and one that at times he could not see beyond the front wheels. Had it not been for the dust, it is probable that the drivers who passed the turn on their first lap would have been able to have seen the wreck in time to avoid it on their second round of the dirt track.

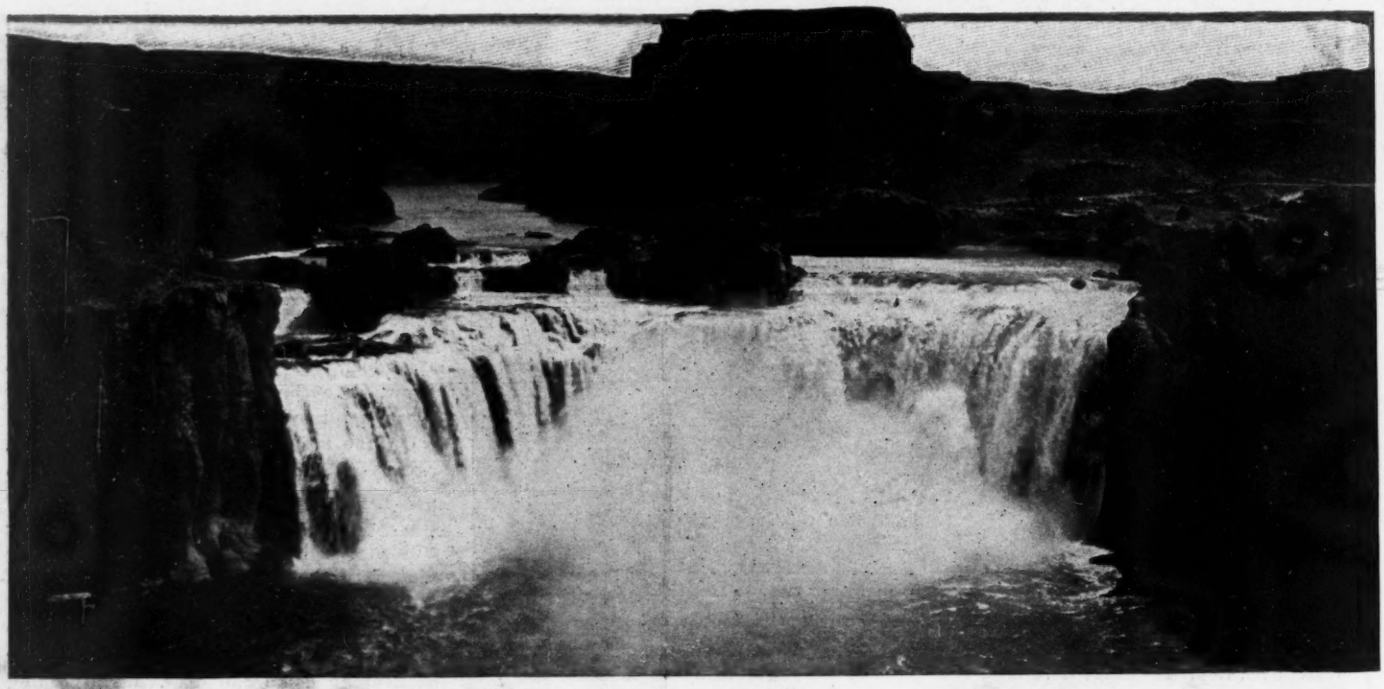
HAS YOUR CAR A SHELL

Findlay, O., Sept. 4—In answer to the petition filed by stockholders of the Vim Motor Co. charging the manager with turning the factory into a munitions plant without warrant of law or the consent of the stockholders, the court held that a shell is a part of a machine and refused to appoint a receiver as asked.



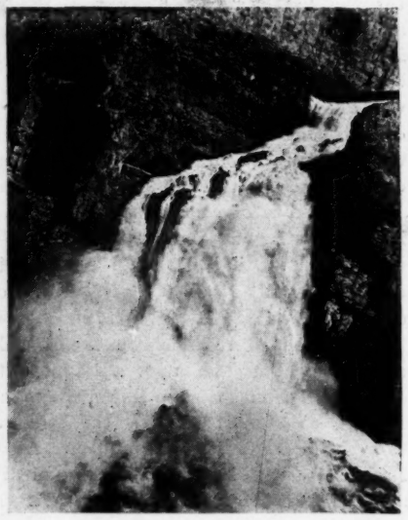
Andy Burt's overturned Stutz in center. No. 10, Ball's Buick. At left, the Ogren

American Waterfalls West of the Mississippi

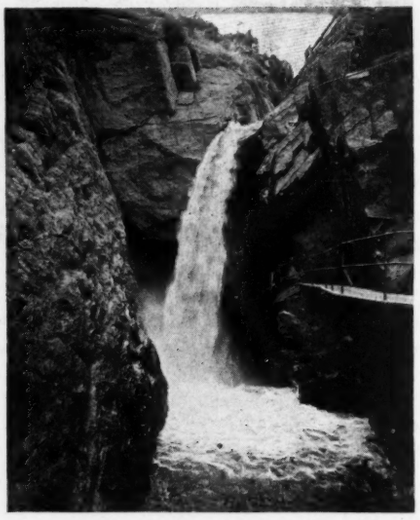


View of Shoshone falls, in the Shoshone river, as seen from the Oregon trail

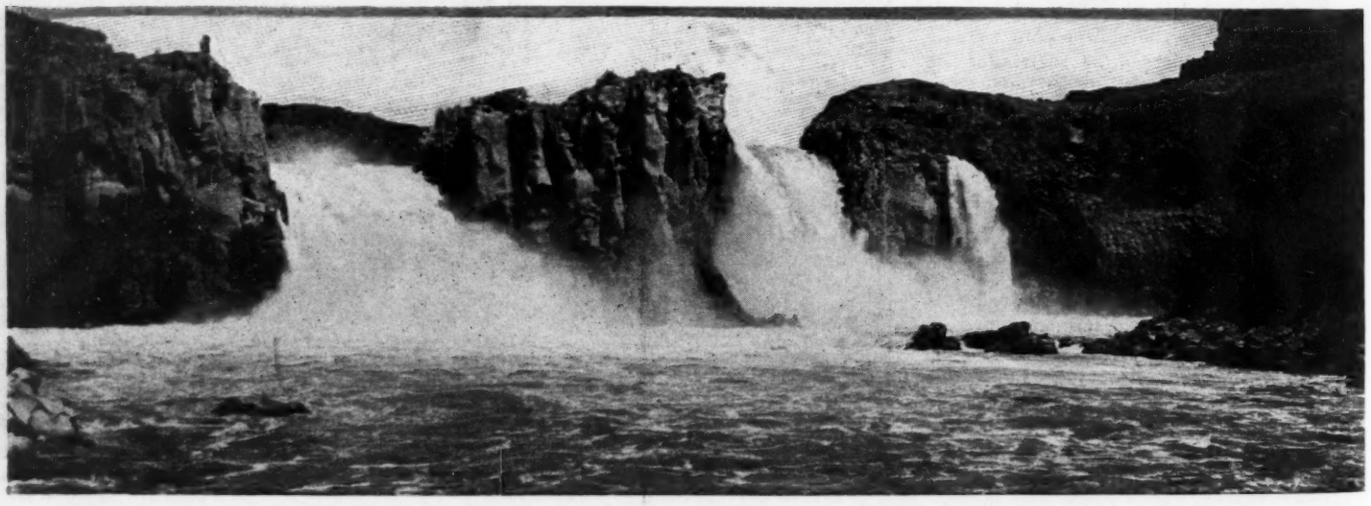
At the head of South Cheyenne canyon, 4 miles southeast of Colorado Springs, are the beautiful Seven Falls



One of the twin waterfalls near north end of Roosevelt dam, higher than Niagara, and 210 feet long

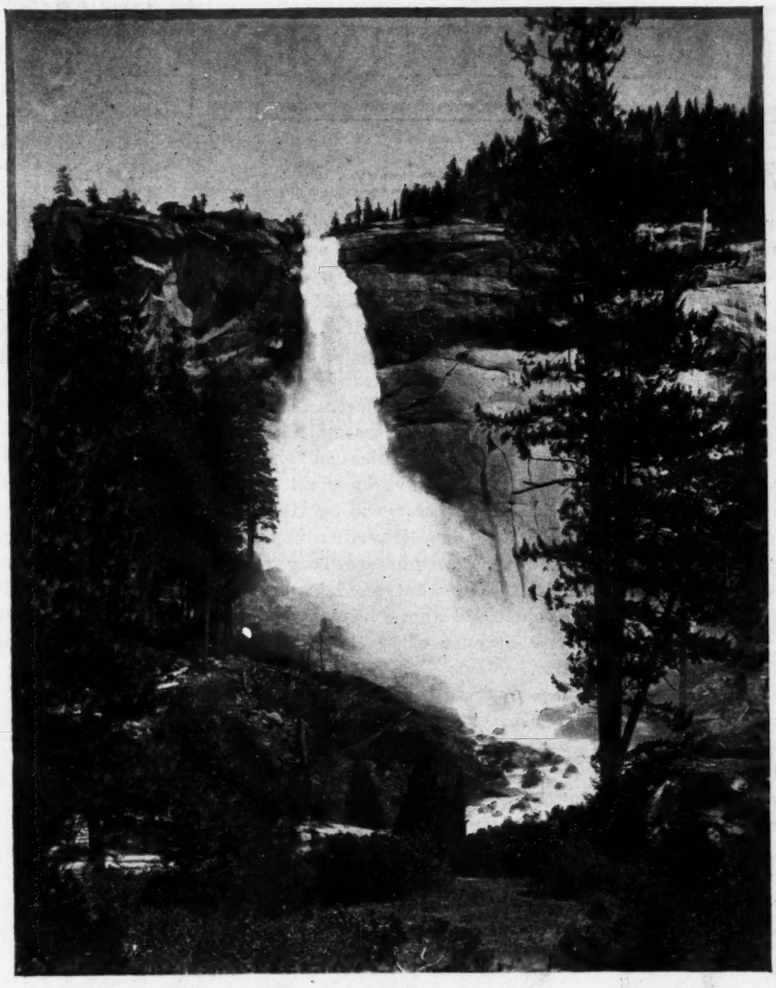


Rainbow falls in Ute pass near Colorado Springs, Colo., on Pike's Peak Ocean-to-Ocean highway

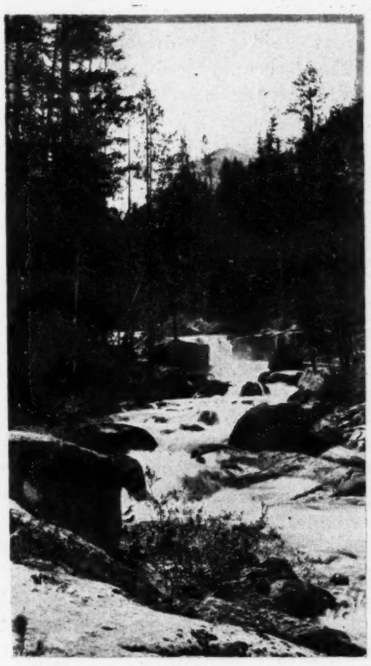


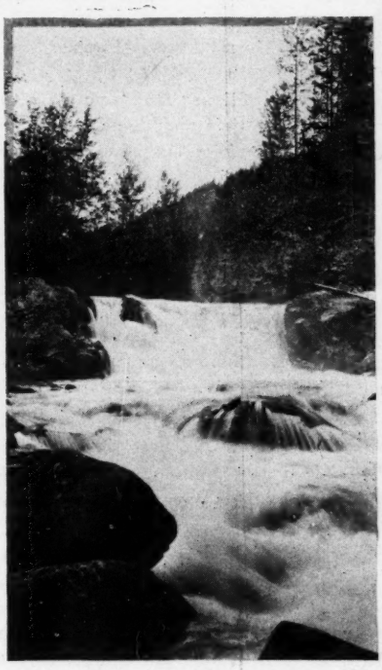
Twin falls, 8 miles from city of same name in Idaho. This is a sheer drop of 187 feet

River—Each Has Its Inspiration and Story

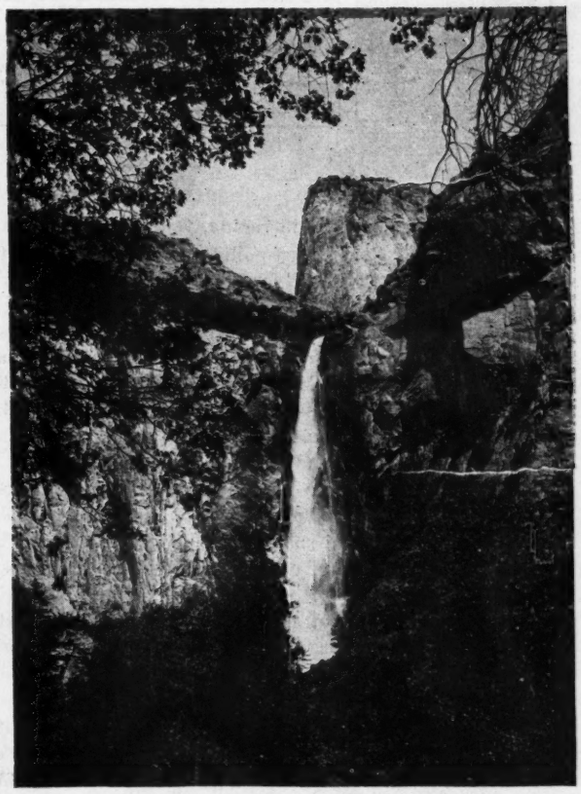


This is Nevada falls, in the Yosemite valley, a crashing cataract which holds its admirers spellbound

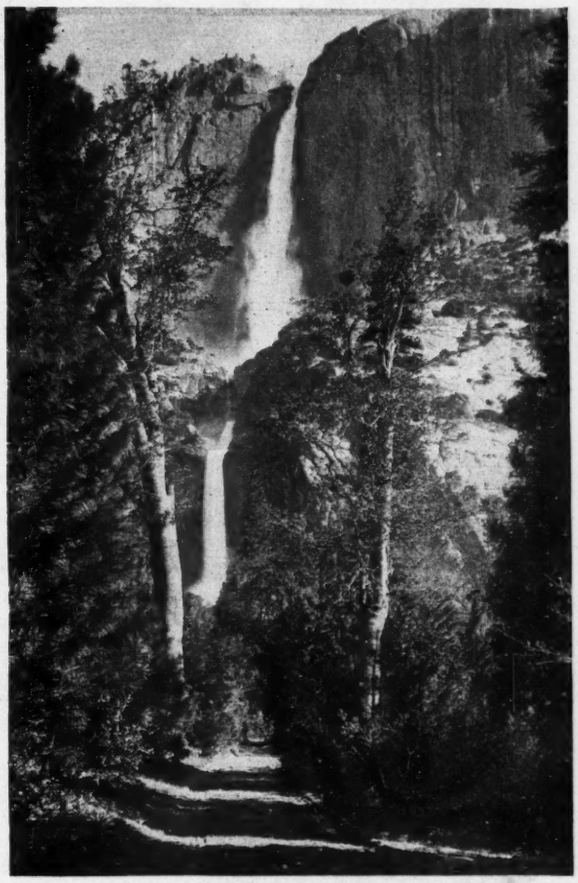




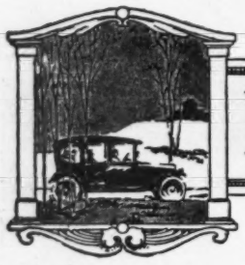
The views above show two of the falls in the south fork of the Payette river, in the Boise national forest. There are many such in this vicinity



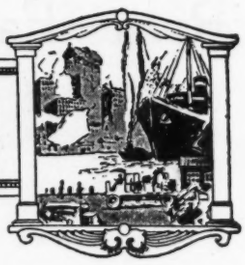
Bridal Veil falls, in the Yosemite valley, which get their name from their resemblance to a bride's veil



Yosemite falls, which plunge 2,600 feet in their descent. This view is seen from the motor road



EDITORIAL PERSPECTIVES



What Is Wrong With Racing

THERE are other evils in racing, there are other factors that have sapped its interest-pulling ability. One of these has been deposit money to drivers. It is a known fact that too much deposit money to drivers has been given during the past year or so. Drivers of repute suddenly become possessed of their grand-stand-filling qualities and ask for deposit money of $1,000 or $2,000. These drivers are entirely honest in their own convictions that they are worth so much money, and perhaps they are. They are the greatest names in racing fame, and certainly should command high pay.

They argue that great artists are always worth more than mediocre ones. Caruso knows that he can fill the opera house any night he sings, and so his scale of prices may be ten times that of smaller artists. He is worth his price—it is his commercial value. We agree.

But where the evil of deposits has come in is that drivers have been more or less accursed of holding up certain meets that may not be centrally located geographically. The drivers know that the promoter must have cars and that he will certainly come across with deposits. Unfortunately, this is not for the best interests of sporting.

Glance at a parallel: We visit a horse race meet and know that all horses carrying certain colors had their transportation paid to the race track. We know that their entry money was rebated. Perhaps they are the fastest horses, and if so it seems all the more natural that they are the very ones that should not need any appearance money. They possess higher winning ability than the others and so should certainly be able to stand on their own feet. They are the last ones to receive appearance money. It would not add to the general lustre of horse racing to know that such deposit money was being handed out. It seems a pretty sure method of hurting the sport. It would seem rather unjust in a sporting event where the big money goes to the winner. In any sporting event any person must take chances. If he is not sport enough for that, then he should give up the pastime, or change his vocation.

We are opposed to appearance money. We believe that it is diametrically opposed to the best interest of motor racing.

IF not appearance money, then what alternative? What way can we show our appreciation to those excellent drivers who have been with us for years and who have been veritable corner stones in racing history. We believe that they should be encouraged, and if it is impossible for them to exist on prize money, then it is good business to give them some form of financial assistance. Here is a suggestion:

Every driver who has driven for a certain number of years, has met with certain success and has had a clean record should be placed in a privileged class so far as having certain legitimate expenses met. He might have all costs of car shipments from speedway to speedway borne by the speedways, and in addition might have his own traveling expenses paid. It might go further and have certain speedway privileges extended to him, in appreciation of what good he has done. All of this would be clean, open and above board. He would receive such assistance solely because of his long career of faithful service and exemplary conduct.

But while getting these favors it would be understood that he received no favoritism in the contest. He has only even chances with all of the others in the race. He has his legitimate handicap. Anything done financially to assist him must not in any way enter into the sport. That must be competition pure and simple.

There might be three or five different stages of privileges extended to drivers. A dean of drivers such as de Palma, with a continuous good conduct card, would receive the greatest assistance; in ranks below would come other old names such as Mulford and Rickenbacher. Those who have had black marks against them for certain violations of rules naturally suffer because of such.

With such a scheme there would be constant inducement for drivers to attempt to get into the classes of greater financial assistance. It would be a great asset to any driver to be placed in Class A, Class B or in the descending orders C, D and E. Rising from one class to another would be as interesting as cutting your handicap in golf. Let the deans of driving have recognition, but don't take away the spectators' interest.

Business Side of Road Building

BUYING good roads is a business transaction. Good bargainers get better road values for their money than poor bargainers. Poor bargainers usually do not know what good road value is. They see something they like in their travels and buy it for home use, without stopping to consider that this may be as ridiculous as to put on a dress suit to feed the cows. No man can make a good bargain for roads who does not know what is needed; yet a large part of the $300,000,000 which is being spent on American roads this year is paid out by men who do not know what is a good bargain in roads. This is not wholly their fault, for little has ever been said about the real economics of road construction.

NOBODY but a spendthrift thinks of spending more money than he has on something he needs. He fits his expenditures to his income, if he is sensible. A sensible road commission tries to do the same, but it is often hampered by a lack of knowledge of how to proceed. Detailed knowledge of this nature is only gained by wide observation, keen insight and shrewd judgment, and for this reason a competent state highway commission possessing such knowledge can render great aid to local authorities who apply to it for advice.

THE first thing to be considered in buying good roads is the amount of money which it is wise for a community to spend for them. Most estimates of this nature are based on the existing annual tax receipts available for the purpose. This is not the best basis for a sound judgment. A family of three persons can make an income of $1,800 go further than a family of six persons can. It is the same with roads. To find out roughly how much money can be devoted to road work it is best to divide the assessed valuation of the district by the miles of roads in it. This gives the valuation, or taxable wealth, of the district per mile of road. This being known, a wise expenditure can be made.

Indorses Pike's Peak Climb Criticism

OFFICIALS of the Pike's Peak hillclimb are planning certain changes for handling the crowds and in the conduct of the meet next year, all of which coincide with the suggestions made in the August 17 issue of Motor Age. We criticized the last meet from several angles and suggested some changes that we believe will go a long way toward making the climb an annual classic, if carried out. In a letter to Motor Age, Chester S. Ricker, who was in charge of the technical committee and the timing of the first meet, indorses the criticism we made and tells what the management plans to do before another meet is held. He says:

"The criticism of the Pike's Peak hillclimb published last week in Motor Age was well taken. After the contest the writer was in conference with the management and out of respect to them feels that a number of criticisms should be cleared up.

"The question of admission price already has been considered and another season will see popular prices for the hillclimb.

"Provisions will be made this year before the good weather ceases for parking space all along the course and particularly in the switchbacks or W's, as they are called. It is generally conceded by those who saw the climb that some position on the turns is ideal for viewing the contest.

"The idea of starting the cars at 5-minute intervals was not one of the management's, but one which the drivers as a body insisted upon. It was originally planned to send the cars up at intervals of either 1 or 2 minutes, as was done with the motorcycles. At the drivers' meeting this was overruled by the drivers, who refused to start at closer intervals than 5 minutes unless all cars carried mechanics. Next year the entry blank will require that a mechanic be carried and starts will be at 1 minute intervals.

"The delay in starting the race was entirely due to the difficulty in clearing the course. There are stretches of several miles over which a car can not find a place to park, hence it required an hour and a half after closing the road to clear the

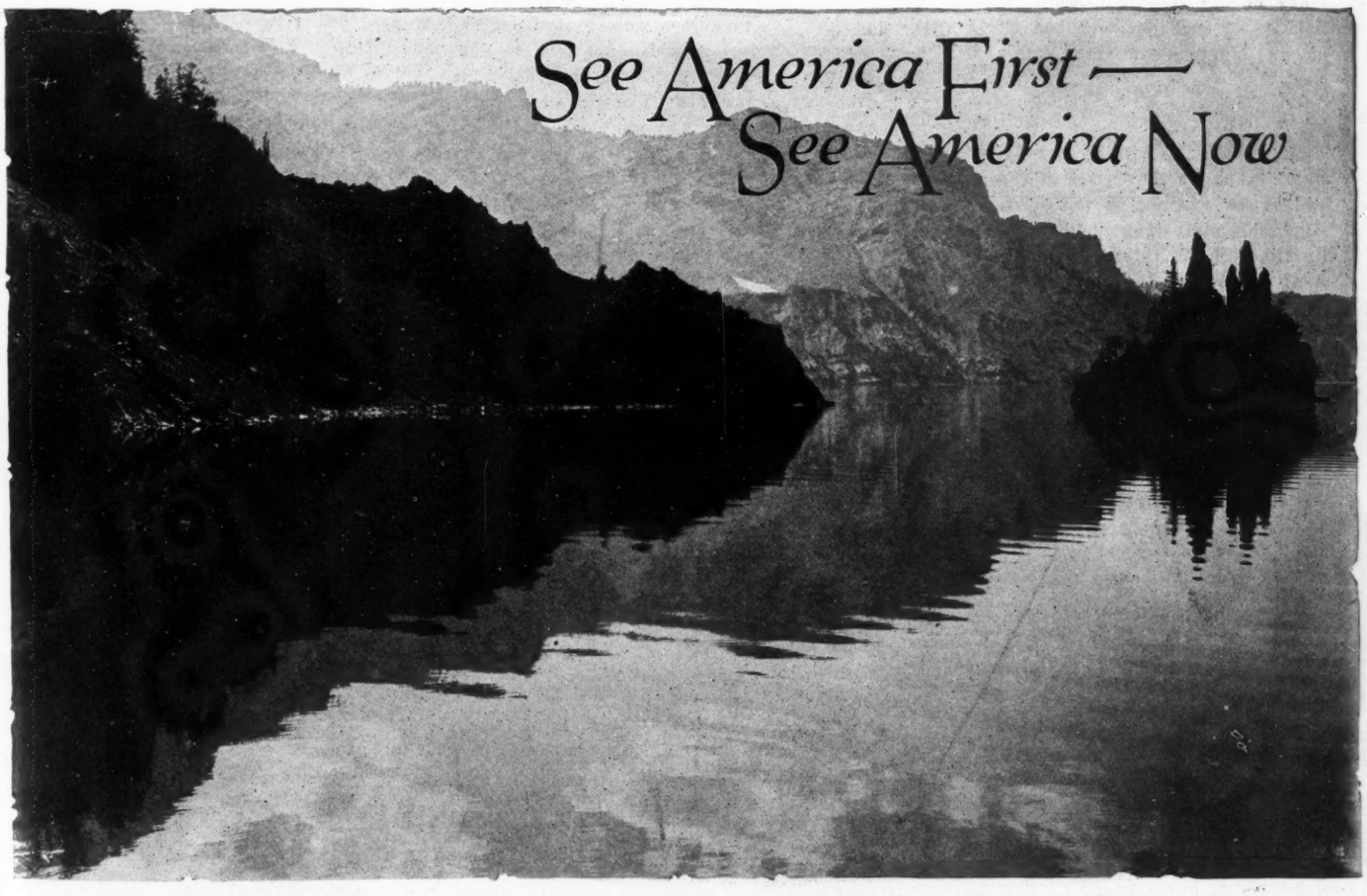
WARNING!

Beware of Subscription Swindlers

MOTOR AGE finds it necessary to warn its readers against subscribing with many of the swindling magazines subscription agents who purport to represent it officially. These alleged subscription agents will show you printed subscription blanks which have nearly all the ear-marks of authenticity. Do not be misled by such.

Some of these alleged subscription agents offer MOTOR AGE at reduced rates, and also offer premiums for circulation. MOTOR AGE makes no such offer to any subscribers. The subscription rate is $3 per year and no premiums of any nature are given.

If approached by such alleged subscription agents, follow the safe policy and subscribe to MOTOR AGE through your local news dealer. If you have not a news dealer at hand, send the subscription direct by mail to MOTOR AGE, Mallers building, Chicago, Ill.



NO. 94—PHANTOM SHIP AND PALISADES IN CRATER LAKE NATIONAL PARK

ABOVE is shown what is termed the phantom ship and the palisades in Crater Lake National Park. This peculiar rock formation with its few trees bears a remarkable likeness to the old three-masted schooner and its location in the shadow of the palisades gives it the appearance of having sought the shelter of these rocks from the approach of a possible storm. The Crater Lake preserve is one of the few government reservations that extends into two states, California and Oregon.

EDITORS' NOTE—This is the ninety-fourth of a series of illustrations and thumb-nail sketches of the scenic and historic wonders of America to be published in Motor Age for the purpose of calling the attention of motorists to the points of interest in their own country.

course. The critic did not notice that the management said the road would be closed at 11 a. m. and that the start would take place as soon as the entire course was clear.

"Regarding timing and announcing facilities, it might be stated that a separate timing and telephone line will be installed for next year. There was not sufficient time to put another line after the writer advised its use before this season's climb. Also more announcing stations will be in place next year so the course can be carefully observed and the start and finish quickly advised as to the clearing of the course. As it was this year, there were only three telephones on the course, one at the top, one at the bottom and one 5 miles from the start.

"There were special signal men stationed, one about 2,500 feet from the start and the other a mile away to warn drivers if their time was not automatically taken. Both Parish and Oldfield ignored the signals to turn back. One gave the excuse that he couldn't win so why bother about the time. The interruption to the timing was due to the announcer at the grandstand trying to telephone for an ambulance when he saw Hughie Hughes run into the bank. No such accident can occur again as an independent timing line will be used."

Mr. Ricker's letter corroborates the stand taken by the writer of the criticism and as he was one of the officials of the climb, his statement should carry weight. He takes the critic to task for his statement concerning the starting time of the race and his attention is called to the program, which states specifically that the climb would begin at 11 a. m.—Editor.

Lincoln Farm a Park

Thousands of Motorists Attend Exercises of Acceptance at Hodgenville

Road and Weather Conditions Are Ideal for Event

LOUISVILLE, Ky., Sept. 4 — Special telegram — The birthplace of Abraham Lincoln is now a national park. A crowd estimated at 40,000 people, including thousands of motorists who came from every part of the United States, concentrated on Hodgenville this morning and proceeded thence to Lincoln Farm, about 2 miles distant, to attend the exercises when President Wilson accepted the birthplace of Abraham Lincoln for the nation.

While trains brought thousands and a host came on horseback, the greater part came in motor cars. Before 8 o'clock 2,000 machines had rolled over the highway to the farm. They kept coming in an incessant stream and by 10 o'clock there were at least 6,000 cars parked around the place. The machines were routed out one pike and returned to Hodgenville over another, so there was little confusion in traffic arrangements. The roads leading to the farm were in fine condition and every precaution had been taken to prevent any accident or delays.

Ceremonies at the farm began at 11:30 o'clock this morning and were concluded about 2 o'clock in the afternoon.

Before proceeding to the farm where the exercises took place, President Wilson's motor car led a parade to the statue of Lincoln in the Hodgenville town square, where the president laid a wreath of flowers at the foot of the statue.

Fifteen minutes before the president left Hodgenville for the farm the road was closed to traffic and remained closed until the arrival of the party. The road was also closed to traffic 15 minutes before the president began his return trip, and no other vehicle was allowed on it except those bearing the presidential party until the machines reached Hodgenville.

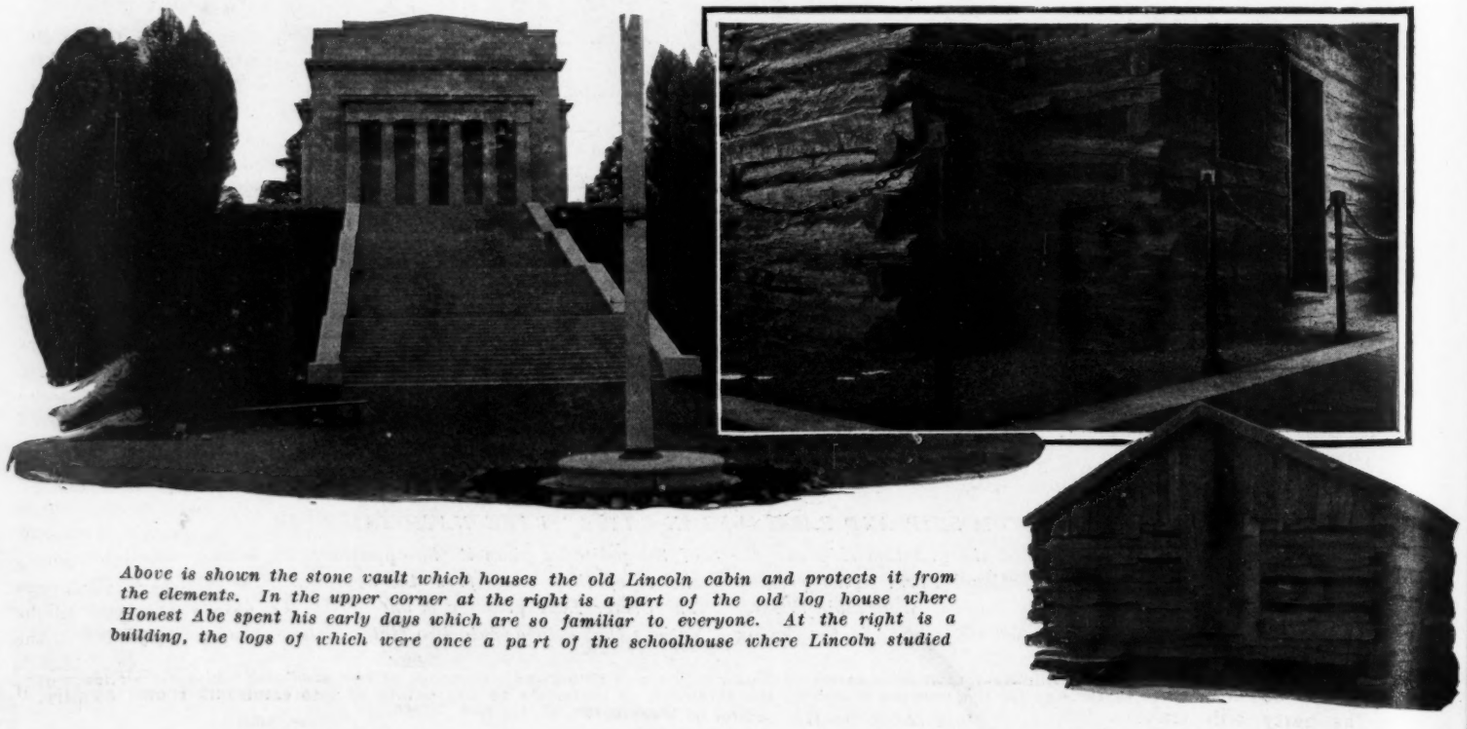
The weather conditions were ideal. Most of the motorists were from Louisville, but practically every other city within a radius of 200 miles was well represented. License tags of a score of states were noted. The majority of Louisville motorists made the trip to Lincoln Farm via the Dixie highway and returned over the Jackson highway.

MOTOR BUSINESS INCREASES

Milwaukee, Wis., Sept. 2—Wisconsin points with pride to its great growth in the motor car business, which on September 1 showed a gain of nearly 35,000 cars for 1916. On the same day a year ago, the total was 75,600 and showed an increase of 25,500 over 1914, but this record has been shattered by the recent report, which indicates that 110,350 cars have been registered by private owners so far this year.

September 1 Wisconsin registered 30,559 more cars than in 1915. This gain is more than the number of cars registered in Wisconsin in 1912 with its 24,578 and approaches the 34,646 of 1913.

A registration of 100,000 cars by January 1 was predicted; the most optimistic predicted 110,000. The first mark was passed before July 15, and the second, Au-



Above is shown the stone vault which houses the old Lincoln cabin and protects it from the elements. In the upper corner at the right is a part of the old log house where Honest Abe spent his early days which are so familiar to everyone. At the right is a building, the logs of which were once a part of the schoolhouse where Lincoln studied

gust 29. Applications come at the rate of 150 and 200 a day, and the new prospect is of 115,000 cars, inasmuch as 4,200 cars were registered between September 1 and December 31 last year.

The increase in dealers is a feature. The report shows 1,936, which is 353 more than in 1915.

The 1916 city of Milwaukee assessment roll shows 10,636 motor cars owned by Milwaukee people, the total value being given as $5,259,250. In 1915 the number of motor cars assessed was 8,273. As is usual in such cases, many cars escape assessment and taxation, and conservative estimates are that Milwaukee has not less than 15,000 or 16,000 cars. The assessment figures show that the number of horses declined 1,058, while motor cars gained 2,363. The number of wagons, carriages and sleighs dropped from 8,848, to 7,865.

HUPP TOUR IN FULL SWING

New York, Sept. 6—The Hupmobile capital to capital touring car stopped here long enough Thursday to give a demonstration of hill-climbing ability. Fort George hill, a 12 per cent grade, about 400 yards long, was negotiated on high gear under sanction of the A. A. A. The car left Friday, September 1, for Hartford, and will visit the capitals of all the New England states.

Harrisburg, Pa., Sept. 1—Arrival at this city marked the second capital-stone on the 25,000-mile tour of the capitals of the states which a Hupmobile is making and also started the party making the trip in full swing on its good roads journey through New England. J. S. Patterson, C. E. Salisbury, George Lipe and W. A. Krohn, who are making the tour, left Washington, D. C., August 28, and visited Annapolis, Md., before coming here.

The route to be followed from here on is by no means a straight one, though the main object of the tour is good roads and therefore direct lines of communication between the capitals. First the path leads through the eastern and New England byways and city streets up across New York state to Buffalo; then it swings southward to Charleston, W. Va., and rebounds to Indianapolis, Detroit and Lansing. The car will visit Seattle before touching the southwest. The Carolinas and Richmond, Va., remain for the last few capitals just before the return to Washington, the starting point.

Through the photographs members of the party are taking en route, together with a graphic account of the trip, the good roads movement is expected to receive further impetus. Just how long the trip will take is a matter that has not been given consideration. The party will make a leisurely jaunt.

Million Weekly Profit

Ford Motor Co. Earns $59,994,118 During the Last Fiscal Year

This Figure Represents Earning of $2,000,000 Capital

DETROIT, Sept. 4—More than $1,000,000 a week was made by the Ford Motor Co. during the fiscal year ending July 31, 1916, according to the financial statement just issued. The profit for the year amounted to $59,994,118 from the sale of 472,350 cars and parts. A total of 508,000 cars was manufactured for the fiscal year, but 35,650 machines, representing about 2½ weeks' output, were in transit and at the branch assembling plants at the close of the year.

Some stupendous figures are contained in the balance sheet of the corporation, which is capitalized at only $2,000,000 and has more than $100,000,000 surplus. The assets include cash in the bank amounting to $52,550,771, merchandise and supplies valued at $31,895,434, accounts receivable of $8,292,778 and other, lesser items. The liabilities amount to only $18,127,312, leaving a surplus of $111,960,907 after deducting $2,000,000 for the capital stock. The aggregate of the business done for the year reaches the staggering figure of $206,867,347.

The report also shows that the Ford payroll contains 49,870 names. This includes the parent plant and all branches. Of this number, 27,002 are at Detroit and get $5 a day or more; 14,335 at the eighty-four branches and assembly plants. The total at the home plant is 34,485. The home office force numbers 1,028.

The marvelous growth of the Ford cash balance in 5 years is indicated by the following table:

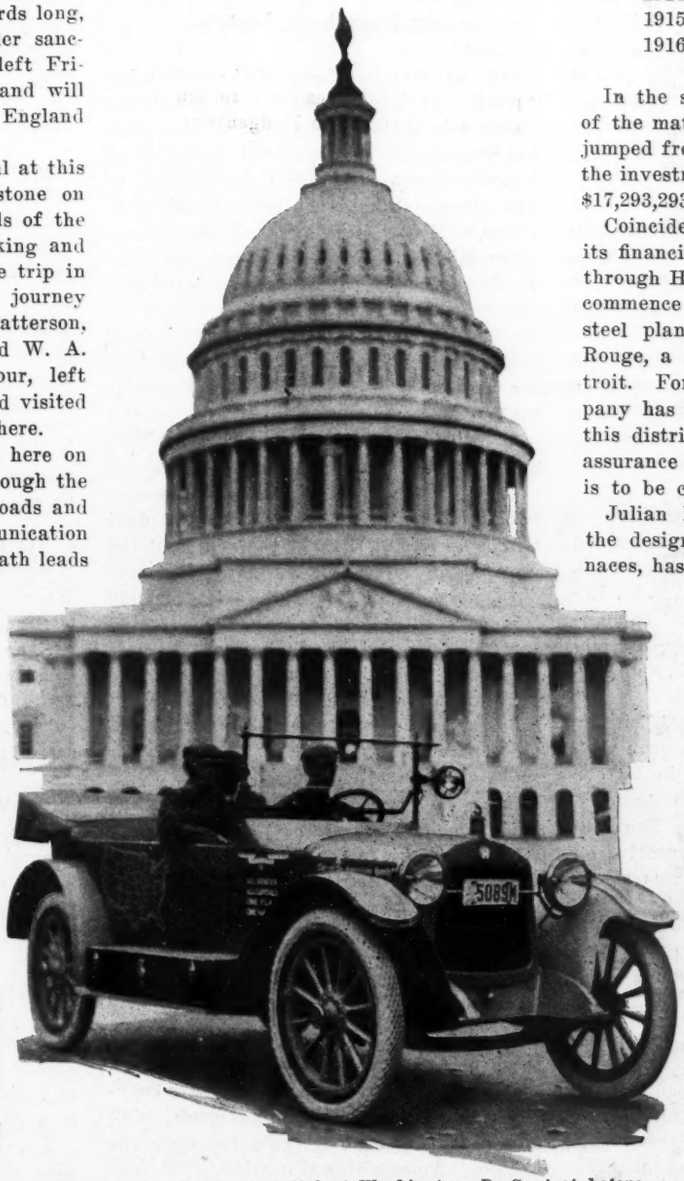
1912	$ 6,400,100
1913	13,225,710
1914	27,441,468
1915	43,788,151
1916	52,550,771

In the same period of years, the value of the materials and supplies on hand has jumped from $6,629,533 to $31,895,434, and the investment in plants from $2,596,115 to $17,293,293.

Coincident with the making public of its financial statement, the Ford company, through Henry Ford, announces work is to commence at once on the much-talked-of steel plant and blast furnaces at River Rouge, a suburb on the west side of Detroit. For some time past the Ford company has been acquiring a large tract in this district, but this is the first positive assurance that has been given that work is to be commenced soon.

Julian Kennedy, recognized expert on the design and construction of blast furnaces, has been retained by the Ford company to design and superintend the construction of two furnaces on the River Rouge property. It will take 134 acres of land to accommodate the down-river works, the location of which will make it advantageous for the big ore freighters to bring the ore down from the northern part of the state and from Duluth. Blast furnaces, docks, coke ovens and other buildings of the plant will entail an initial expenditure of $3,500,000.

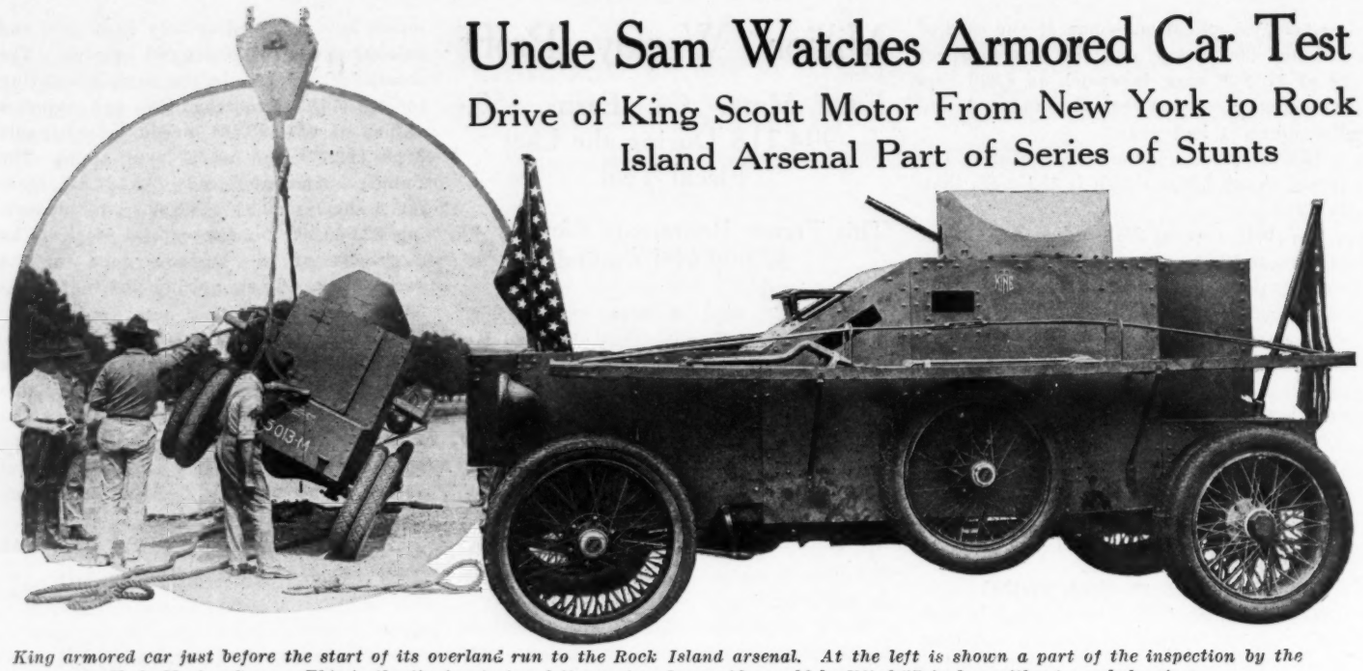
In the report, no mention is made of the contemplated output of cars for the coming year, but elsewhere it has been stated that the output will be 750,000 cars and 250,000 of the new Ford 1-ton trucks that is to come out about the first of the year.



Hupp car in front of capitol at Washington, D. C., just before start of tour

Uncle Sam Watches Armored Car Test

Drive of King Scout Motor From New York to Rock Island Arsenal Part of Series of Stunts



King armored car just before the start of its overland run to the Rock Island arsenal. At the left is shown a part of the inspection by the U. S. Marine Corps. This is the tipping test and it was found one side could be lifted 35 inches without overbalancing

By Darwin S. Hatch

ROCK ISLAND, Ill., Sept. 5—That government interest in military motors has not waned with the subsiding of the temporary excitement on the Mexican border is attested by the arrival at the government arsenal here today of the King armored car which was under test by the officers of the ordnance department at Fort Meyer, near Washington, D. C., recently. With its arrival at Rock Island, the land battleship completed another of the series of strenuous trials through which it is being put.

The U. S. marine corps also has put the car through its paces. In Philadelphia this branch of the service tested out the car under mimic warfare conditions and later it was taken to Atlantic City for target practice.

The present test is for the purpose of determining the reliability in overland trips and began in New York August 29. It was under the supervision of F. E. Edwards, chairman of the technical committee of the American Automobile Association; H. A. Tarantous, New York, and Darwin S. Hatch, of Motor Age.

The armored car was accompanied also by Captain W. A. Ross, who has been with the military cars of the allies in Europe and now is connected with the Armored Motor Car Co., Detroit, Mich. The ordnance department had a representative on board and the King company was represented by W. A. Bradfield.

It is not permitted to give the exact results of the present test, but in general they seemed quite satisfactory.

The miniature scout cruiser for land fighting is almost completely covered with ¼-inch armor plate and carries a revolving turret in which is mounted a machine gun. In action, it carries three men, a driver, mechanic and gunner, the latter revolving with the turret. When not in action three additional men can be carried comfortably outside. It is arranged to be completely inclosed in action, doors even closing over the radiator, so that with the exception of the wheels, no vital parts are exposed to fire. Small slits in the armor plate give vision to driver and gunner. Three sources of gasoline supply are provided, all within the protective covering, thus assuring a supply of fuel, even though the main tank should become damaged. The main tank in the frame feeds by suction to the Carter tank, and two others holding 4 gallons each feed by gravity.

The body is the design of Captain Ross and was built by the Armored Motor Car Co. It is mounted on an eight-cylinder King chassis, which, except for the dual wire wheels and tires in the rear and the wire wheel in front, is standard King production. Equipped with the armored body the car weighs 4,600, a figure considerably less than the weight of the armored cars now in the service of the United States government, and the interest of the government in these tests can be attributed to the desire to determine what the lighter types of armored cars can do.

Some of the other features of the car and its equipment are of particular interest. The body is constructed in units so that it can be taken apart for handling very easily. Two bridges, each 12 inches wide and as long as the whole car, are mounted, one on either side of the body, so that they serve the purpose of mud guards as well as for crossing ravines or loading on freight cars, barges, etc. At present these bridges are wood with steel trusses, but later will be steel throughout. Service tool equipment, including spade, pick and sledge hammer, are mounted upon the bridges. Ammunition is carried in the rear of the body under a steel platform. It is designed to be especially adaptable to scout and reconnaissance work in the field and can be swung aboard a man-of-war or a small boat for assisting landing parties.

NEW CLASSES FOR ST. LOUIS RUN

St. Louis, Mo., Sept. 3—New classification rules have been announced for the Automobile Club of St. Louis Reliability run to Keokuk, 194 miles and return Sept. 23, 24 and 25. Roadsters and touring cars, always separated previously, will be classed together this year. There are three classes, as follows:

Class A—Amateur drivers, owners or members of immediate family of owner, regardless of membership in the club.
Class B—Regularly employed chauffeurs driving cars belonging to members of the club.
Class C—Non-competing and governed only by rules as to time and route.

TO BAR MOTORS FOR STUDENTS

Berkeley, Cal., Sept. 2 — Benjamin Ide Wheeler, president of the University of California, in addressing the opening rally of the semester recently, said he was considering taking steps to prevent students from bringing their motor cars to college. Too many of the richer students attempt to show off with their cars, he said.

WESTON LEAVES TIRE CO.

New York City, Sept. 2—J. C. Weston, general sales manager of the United States Tire Co. since 1914 and connected with that company since its beginning, has resigned to become vice-president in charge of the sales of the Mitchell Motors Co., Racine, Wis. He thus takes up the duties of O. C. Friend, former sales manager of the Mitchell-Lewis company, who resigned last July to become vice-president and general manager of the United Motors Co.

Mr. Weston has been in the tire business since 1896, when he became a sales-

man for Morgan & Wright. In 1906 he became secretary of the company and stayed with it when it became a member of the United States Tire Co. At that time Mr. Weston's duties were confined to the Pacific coast district which he organized. From there he took charge of the central district in Chicago and in 1913 came to New York as head of the contracting department, handling all the motor car maker's business. The next year saw him in the position he has just vacated.

Though no successor has as yet been named by the tire company, his former duties will be redistributed at the present time by President J. N. Gunn.

MOTOR FASHION SHOW PLANNED

St. Louis, Mo., Sept. 3—A motor fashion show is to be a part of the St. Louis Agricultural fair, the first week in October. Secretary Stinson says that he suggested to costume dealers that they send models to the fair for one day and that the suggestions were enthusiastically received by many stores. This exhibition will be the same day as the parade and exhibit of all 1917 model machines then in St. Louis. The latter feature is under the direction of the Automobile Manufacturers' and Dealers' Association of St. Louis.

EASTERN GASOLINE CHEAPER

New York City, Sept. 5—Gasoline prices in this city, Long Island and Connecticut, have been lowered by 1 cent a gallon wholesale to 22 cents by the Standard Oil Co. Texas gasoline sells at 23 cents wholesale. Quotations from the rest of the country are as yet unchanged, though prices are expected to drop on account of the large expansion in gasoline manufacturing capacity and the improvement in refining methods which make possible a larger gasoline yield with a corresponding increase in the production of crude oil.

DECLARES ANOTHER DIVIDEND

Detroit, Mich., Sept. 6—The Paige-Detroit Motor Car Co. has declared a stock dividend of 50 per cent. This is the secnod dividend in the last 4 months. May 13 the company gave a dividend of 80 per cent and increased the capital stock from $1,000,000 to $2,000,000. At the same time, the par value of the stock was decreased from $100 to $10 a share. The present dividend applies to stock having par value of $10, which is now selling at about 55 on the Detroit stock exchange.

MORGAN HEADS ABBOTT CORP.

Cleveland, O., Sept. 6—Guy W. Morgan has been elected president of the Abbott Corporation, which was formed recently with a capital of $1,250,000 to take the place of the Consolidated Car Co. as the manufacturer of Abbott-Detroit cars.

Mr. Morgan was for several years in charge of purchasing for the Mitchell-Lewis Motor Co. He was originally in the battery business.

State Fair Dealers' Boosting Tour Ends

Milwaukee Motorists Complete Show-Promotion Circuit of State

MILWAUKEE, Sept. 2—The Milwaukee state fair boosters, consisting of 160 motor car dealers in thirty-seven cars, finished their tour of the state today; they traveled 6 days, covered 555 miles and "boosted" in forty-four cities, villages and hamlets of the most prosperous farming and industrial section of the Badger state. The object of the tour was to arouse interest in the state fair, at which one of the features is a show by the Milwaukee Automobile Dealers, Inc. This state fair show is larger than the regular midwinter show.

From a fair-and-show boosting proposition it is predicted by Manager Bart J. Ruddle that the tour will become an extensive trade promotion tour; such tours are held in the Northwest, merchants of the Twin Cities making a circuit through the states tributary to Minneapolis and St. Paul in special trains and getting in close touch with the people of the territory.

Next year it is expected that a large number of accessory people will participate in the tour; this year a Racine tire car tailed the parade as a roadside help and secured considerable advertising. The advertising, due to the tour, is not its least valuable point; each car is labeled, there are a number of 1917 models in line and several sales were made enroute.

While the extension of the boosting tour into a trade promotion tour is not at all definite as to details the logical plan, Ruddle states, would be a motor tour, inasmuch as railroad circuits are such that speedy, consecutive visits could not be well arranged along railroad lines, at least not so well as along the motor roads, which generally are quite good.

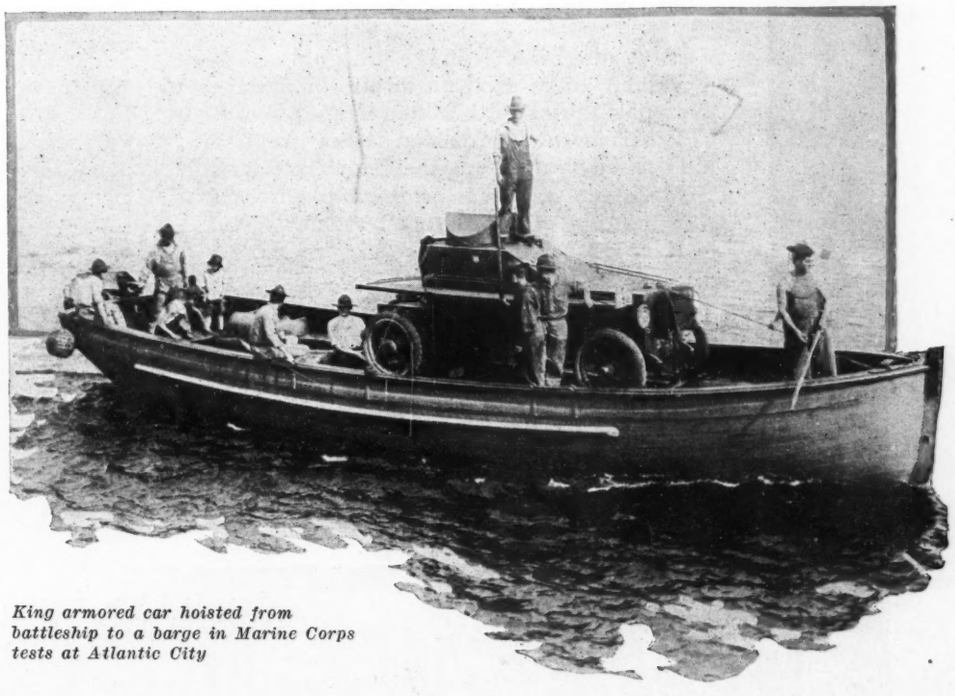
The state fair boosting tour, which was instituted last year, was successful this year from an interest standpoint and the viewpoint of the dealers is indicated by the fact that whereas there were only seventeen cars last year thirty-seven were in the line this year. Also, the co-operation and reception along the route was appreciably better than a year ago.

TORBENSON AXLE CAPITALIZES

Cleveland, O., Sept. 1—The Torbenson Axle Co., of this city, has taken out an Ohio charter at Columbus with a capital of $1,750,000. Of this amount $1,000,000 is preferred and $750,000 is common, but only $500,000 of preferred and $395,000 of common are to be issued now. The $395,000 will cover the taking over of the old company of Torbenson Gear & Axle Co. and also provide $400,000 of new capital. Practically all the stock has been disposed of at private sale. The company has been located here about a year. Recently a 4-acre site on East 152nd street was purchased.

FOOTE H. A. L. PRESIDENT

Cleveland, O., Sept. 1—Ward Foote has succeeded H. A. Lozier as president of the H. A. Lozier Co. Mr. Lozier resigned last week on account of ill health. Morris Towsen has become a director since Foote took active management of the company.



King armored car hoisted from battleship to a barge in Marine Corps tests at Atlantic City

My Motor Car and I

By Rolland A Beens

Ours is God's country, where the lanes
Are fragrant, flower-bordered aisles.
Where placid rivers run their course
Along our paths for many miles.
By hill and dale, past field and hedge,
Where Nature spreads her perfumed coat;
On pinions swift my car and I
Are masters of the far-flung road.

I crave no chariots lined with gold,
Which kings used on affairs of state;
Nor palanquins with silken drapes,
Wherein rode lords and ladies great.
Compared with mine their joys are small,
My steed knows neither whip nor goad;
But mindful of my slightest touch,
It speeds along the far-flung road.

Along the city's crowded streets
It bears me safely, swift and sure;
Where Traffic rears her mighty voice,
Where danger lurks, we feel secure.
The world is ours; from bustling mart
No countryside now seems remote;
We're conquerors of Time and Space,
We're masters of the far-flung road.

Government War Trucks on Border Ill-Handled

Midwest Section of S. A. E. Told of Conditions in Mexico

MILWAUKEE, Wis., Sept. 2 — Inside facts on the operation of war trucks with the late-lamented Villa punitive expedition in Mexico came to light tonight in the third quarterly meeting of the midwest section of the Society of Automobile Engineers in Milwaukee.

It was stated that a great deal of the trouble with all makes of trucks operating between the base at Columbus, Tex., and the head of the column in Mexico was due to the fact that some of the trucks were driven by civilian chauffeurs from the factories, who were paid three times as much as the soldier drivers, called sergeant chauffeurs.

Naturally there was much hard feeling on the part of the soldier drivers and they did not take much trouble to care for the trucks properly. Several weeks on the border brought about instances in which the trucks were deliberately wrecked by the disgruntled sergeant chauffeurs, according to Jerry Decou, of Jeffery, who expressed the belief that much avoidable trouble came through rivalry between drivers of different makes of cars.

This caused drivers to attempt to get to the bases first, and instead of the specified speed of 14 miles per hour, speeds of 24 miles per hour were made. This fact, together with the work of the alkali dust, 2 feet deep in places, made the operating conditions particularly bad.

Decou stated that he saw more than ½ inch of mud in the crankcases of some of the trucks at the U. S. government service station. Sometimes the trucks came in without a drop of oil in their engines and some with only a thimbleful.

Decou added these statements on the mud and oil in confirming some statements of H. L. Horing, of the Waukesha Motor Co., whose paper, "Truck and Tractor Engines," was the feature of the meeting.

Use of Semi-Steel

In the discussion which followed Horning's paper, J. W. Decou, of Jeffery, questioned the value of the use of semi-steel for cylinder casings. F. A. Snow, of the same organization, explained that steel was used in place of cast iron because the crystals of the metal were finer which increased the wearing qualities. Smith expressed his opinion that the piston Horning specified was light.

Depou spoke of a car he drove several years ago which had a four-cylinder, 5 by 5½ motor with a manifold of $\frac{5}{16}$ inch inside diameter. The experiment was to determine the starting abilities with the use of this small manifold. He stated that the motor started under adverse conditions, but that a maximum speed of 15 miles per hour was all that the car was capable of.

When asked concerning force-feed lubrication Horning stated that he believed in it but that he was now using splash. In line with this, A. F. Milbrath, of the Wisconsin Motor Mfg. Co., said that a pressure feed as low as 2 pounds could be successfully used in tractor and truck motors, but that the trend of design was to use about 10 pounds.

Owing to the fact that many of the engineers were unable to attend the meeting on account of fear of the impending strike, the attendance was not as great as expected. After the paper and its discussion were heard, the engineers inspected the electrical and motor car laboratories of the Central Continuation School, in the auditorium of which the meeting was held.

A brief digest of Horing's paper follows:

The purpose of the paper was to illustrate the differences in demands on engines for use in trucks and tractors, to state the most serious problems the engineers face in fulfilling the demands and how they have been met, and what lines the developments of the future likely will take.

Truck and Tractor Engines

He gave the following specifications for what appears to be good practice in motor design and material for trucks and tractors. These were arrived at after examination of all foreign and American specifications available for successful trucks and their motors and American practice in tractors:

Cycle—Four.

Number of cylinders—Four.

Cylinder type—in pair or cast in block—L-head of valve-in-the-head.

The L-head seems to be less sensitive to ignition troubles and more commonly used, though the valve-in-the-head has decided theoretical, as well as actual, points of excellence.

Material—Semi-steel.

Elements of design—Cylinder design for truck and tractor motors is mostly involved in an efficient combustion chamber, for it is here that the basic process of the motor occurs and where most defects are evident.

Generally speaking, we have recalled by this demonstration the following principles:

1—The maximum temperature of any spot in the cylinder must be kept below the pre-ignition point.

2—The maximum temperature of any spot in the cylinder must be kept below the cracking point of any part of the fuel.

3—Any one spot will determine the performance of the engine.

4—That one spot capable of cracking fuel or pre-ignition spreads over an area and causes so-called steam pockets in the circulation, which further extends the disturbance in the performance.

5—Economy of fuel consumption is established by a high average temperature of combustion chamber walls.

6—The limit of practical compression, hence power, output, economy and of fuel quality which can be successfully burned is established by a high average temperature of the combustion chamber and low maximum temperature of the hottest spot.

Valves—Poppet.

Material—High-carbon alloy steels hardened all over.

How Held—Either to piston or in connecting rod.

Type of seat—45-degree angle.

Piston pin—Hollow.

Material — .20 carbon steel, case-hardened, ground and polished.

Type of bearing—Bronze.

Valve tappet—Mushroom or roller-type.

Timing gears—Crankshaft gear .30 carbon steel.

All others—Semi-steel.

Teeth not less than 8 pitch helical.

Crankcase—Aluminum with 8 per cent copper.

Bearings—High-tin babbitt alloy.

Flywheel—Stored energy of 30 per cent.

Connecting rods — .35-.45 carbon steel, heat treated for an elastic limit of 70,000 pounds per square inch.

Camshaft—.20 carbon steel, case-hardened and ground.

The paper then discussed the merits of kerosene as a fuel. The development of kerosene burning in engines of the prevalent types must start with the engine and end with the carbureter, was the point made.

HOOSIERS BUY TRACTORS

Indianapolis, Ind., Sept. 5—The national farm power demonstration held here last week attracted 100,000 prospective buyers, the sales on the grounds amounting to $150,000. The demonstration was given under the auspices of the Indianapolis Tractor Club. The exhibit was a success from every standpoint, regardless of the fact that the program on Friday was eliminated so that manufacturers could remove their exhibits to Madison, Wis., the scene of the next demonstration, before the impending railroad strike could stop traffic. A. E. Hildebrand, of Bloomington, Ill., director of the national demonstrations, predicted that $750,000 worth of farm tractors will be sold in Indiana this fall as a result of the demonstration.

MASTER PLUGS FOR P. O. CARS

Washington, D. C., Sept. 5—The postmaster-general has awarded to the Hartford Machine Screw Co. the contract for filling the spark plug requirements of the postal service for the ensuing fiscal year with Master Calorite spark plugs.

Mending Wrecked Motor Cars

Tool-Box Device for Temporary Aid to Stranded Motorist

By Wallace B. Blood

THE parts of a motor vehicle which suffer most frequently in accidents are in the front of the car, the front wheels, steering gear and axles. It is a simple matter to equip the tool box with a few first-aid devices which, providing the accident is a conventional one, will permit the owner to get his car home on its own power, and after he gets it home repair other damage in his own garage.

The writer once saw a home-made front-wheel crutch, constructed from a caster off an abandoned shop truck, a bar of cold-rolled steel, a ball thrust bearing and a nut, with the use of which a car could be driven home under its own power with but one good front wheel. The crutch is illustrated in Fig. 1. Although it was impossible to make measurements, it is a guess that the arm of the caster was about 2 inches in diameter. Into the top of this a hole was drilled about $\frac{1}{64}$ inch larger in diameter than the hole through the front-axle yoke, and into the arm about 3 inches.

How Crutch Is Made

A bar of cold-rolled steel with a diameter which would make it a loose fit through the holes in the yoke arms was cut off a length to allow it to bottom in the hole in the caster arm and project about 1½ inches above the top of the yoke arm. The upper end was threaded far enough down so that a nut, when screwed to the bottom of the threads would seat against the yoke arm and still permit the bar to project to the bottom of the hole in the caster arm. An ordinary ball thrust bearing with an inside diameter corresponding to that of the steel bar and an outside diameter approximating that of the caster arm was used between the caster arm and the axle.

In case the front wheel was rendered useless in an accident, the builder of the device would remove the king pin and the hub with its forging, of course, loosening the steering attachments, and then lash the steering arm firmly to the axle with strong wire in such a manner that the steering action would be maintained. The homeward trip required slow and careful driving and, of course, the device would not be practical over soft or sandy roads, because of the small diameter of the caster wheel. Nevertheless, with hard roads between himself and home a car owner could save himself an expensive tow if he had such an equipment in his tool box.

The leverage available in a motor car jack can be put to a number of uses in case parts are sprung out of line by an accident. Suppose the car goes into a ditch or rams a wall so that the front wheels are sprung out. In most every design there is a provision for adjusting the front wheels by a take-up in the steering-gear cross rod. If the wheels are thrown out 3 or 4 inches, however, bringing them back into position with the use of this adjustment will throw the steering adjustment out and the car will not turn far enough to the right, this providing that the car is a left-hand control with steering mechanism designed as shown in Fig. 2.

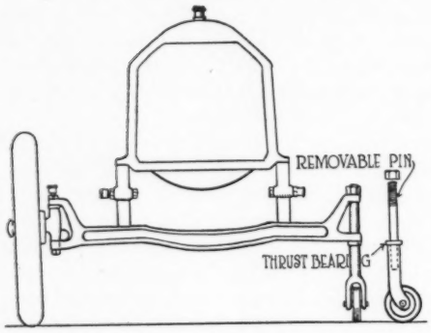


Fig. 1—Crutch made from caster off of abandoned shop truck

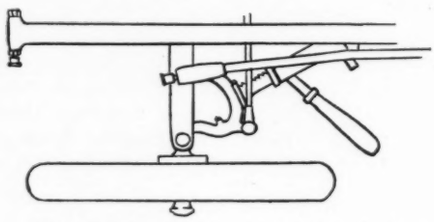


Fig. 2—Using jack to adjust front wheels by bending steering arm

The difference can be righted by blocking the right wheel from the front center of the rim to the frame, applying a jack between the spring and the steering arm as shown in the illustration and bending the arm with the jack sufficiently to afford the proper adjustment. The steering arm is a forging and will stand what slight bending is needed without danger of breakage. This is merely an example of what can be done with a jack. Bent brake rods can be very easily brought back into place with a jack.

Repair of Damaged Radiator

A damaged radiator is an unsightly looking object and the general impression is that it is such a delicate affair that repairs should be performed only by the factory. With a vertical-tube radiator where radiation is gained through a series of metal plates one above the other, the car owner can easily iron out the damage done providing that the tubes themselves have not been broken out or punctured. The radiating plates are easy to bend and may be lined up with a screw-driver pried between them as shown in Fig. 3.

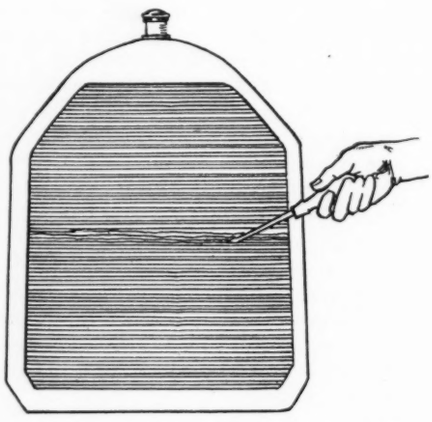


Fig. 3—Straightening radiator fins with screw driver

We know of another ingenious owner who had a car which was only too frequently afflicted with spring breakage. It seemed impossible for him to procure springs which would stand up under his car and still be light enough to afford some measure of comfort. He made the best of it by carrying in his tool box two pieces of broken leaves from springs that had previously let go and two pairs of spring clips. When another spring would break, and in his car it had the peculiar faculty of going through every leaf in a single place, he would place the two broken leaves on either side of the fracture, put one spring clip, or sometimes two, over the broken leaves and on each side of the break, clamp the clips up tightly and proceed home — to buy another spring. Fig. 4 illustrates the method with which this repair was made. Motorists who chase around farm yards after blocks of wood and fence wire with which to lash together broken springs would do well to find a place in their tool boxes for this simple equipment.

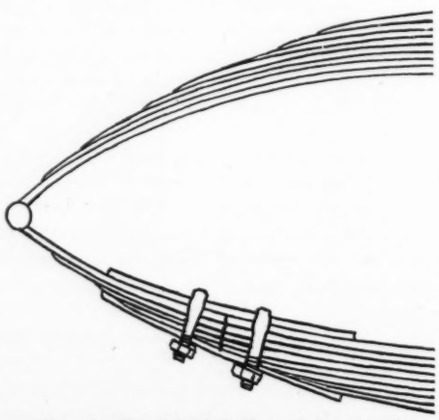


Fig. 4—Repairing broken spring with spring clips and leaves

In most motoring communities, particularly in large cities where street traffic is heavy, there are always to be found scarred up cars, old and new, which have been rammed in the rear or have backed into obstructions which have defaced the metal back with unsightly dents. If the owner prides himself on the appearance of his car and still does not think he can afford to take it to a body maker or a garage to have the dents pounded out, he can do the job himself, and it is a simple thing to do.

First of all the upholstery and springs must be torn down to give access to the metal of the body. If the binding strip is carefully removed and the upholstery tacks pulled out with an upholsterer's claw, or even a screw driver, there is no need of damaging anything to require replacement. With the upholstery and springs dropped down out of the way as shown in Fig. 5, the dent may be ironed out with a block of wood and a hammer. If the dent is in a rounded part of the metal, the wood block should be filed to accord with the curve of the body so that the smallest dents may be hammered out evenly.

Another Use for Broken Leaves

Going back to the broken spring leaves and spring clips which were described for use in repairing broken springs, the same articles might well be utilized in supporting a broken frame, providing the portion of the frame at which the break occurs is narrow enough so that the clips may be slipped over it. This is a repair which will only permit an owner to get home if he breaks the frame on a country road, and is not a permanent replacement. The body bolts would have to be loosened, a broken leaf placed on the top of the frame and another on the bottom, the clips placed over them, plates put over the ends of the clips and the nuts tightened. If this repair is ever used, very careful driving should be done, as the body is raised up from the frame by the clips and is liable to crack somewhere or the doors be badly sprung if the car is driven roughly.

The old question of getting home if a tire blows out and you have no spare, has been given any number of solutions, such as winding the rim with rope, etc. Here is another one. We will suppose that the blowout left a hole through the casing about four inches long, a wound that could not successfully be closed up with inner or outer boots or a combination of the two. Go to the nearest farm house and beg or buy a towel, one which is firmly knit and free from holes. Wrap the towel around the tube at the place where, when the tube is inserted, it will come directly over the blowout. Then inflate the tire enough so that the tube presses firmly against the casing and wrap the blown out portion of the tire tightly with wire or rope. The towel is a new fabric lining and the wire or rope keeps the tube from bushing out through the opening in the casing. Such a repair will take you many miles if it is carefully made and the tire may be run on a full pressure of air.

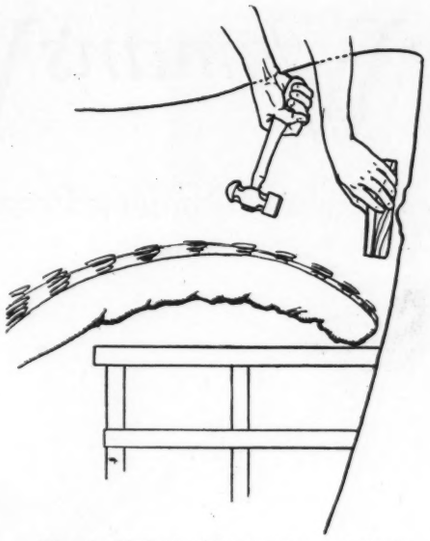
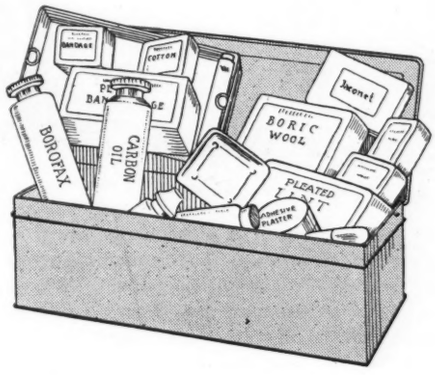


Fig. 5—Method of hammering out dents in rear of body



First-aid kit convenient for carrying in the tool box

Bent fenders may be pounded out as easily as the body metal, providing that the bends are not so sharp that reshaping will crack the metal. The fenders should be removed and held against a metal surface. The dents can be ironed out with the round head of a machinist's hammer.

Suppose that your car has become badly mussed up in the body and fenders and you have pounded out the bruises in the manner described above. The finish of the metal work has naturally suffered. A repainting of the entire car is unnecessary, however. If your car is painted black, the bad places may be touched up with black, glossy fender enamel, it will dry overnight, in fact, an owner may paint his whole car with this enamel and do a very good and inexpensive job with a single coat. Greatest care should be exerted in keeping the dust away from the paint. If the motorist does the job in his own garage he should first sweep it out very carefully, allow the dust in the air to settle overnight, then wet the floor, walls and ceiling with a hose and proceed with the painting job before the dust has had a chance to dry out and fly around again. Quick-drying fender enamel will set in 12 hours and after that dust will not affect it.

There should always be room in the tourist's tool box for a fairly complete first-aid kit. The seriousness of its function can be lightened by the thought that it may become useful in other ways than patching up wreck victims. The can opener may slip when opening the potted ham for the roadside lunch.

A good first-aid kit may be purchased for $2.50. A thoroughly complete one will not cost more than $5.50. The one illustrated sells for $3.75 and its compactness and contents make it particularly adaptable to the motor car tool kit. It contains bandages, dressing, vaporole, aromatic ammonia, borofax, carron oil, adhesive plaster, protective skin, pins, etc. Providing there are no bones broken, the equipment is such that most any kind of cut or bruise can be well taken care of until the injured party is put into the hands of a physician, if needs be.

TO MAKE 20,000-MILE TUBE

St. Louis, Mo., Sept. 1—A tire with a guarantee of 20,000 miles of service without puncture, blowout, or rim cutting is promised by the Sterns Tire & Tube Co., a subsidiary of the Efficiency Oil Corporation, which will break ground here September 10 for a plant with a capacity of 1,600 casings and 3,200 tubes daily. Edward Sterns, president of the oil corporation, is the inventor, and he has been testing the tube for 6 years. Another plant has been planned by Henry Matthews ,of Trenton, Canada, purchaser of the manufacturing and selling rights of the "Sternwear" tubes and casings in Canada. The new tube will sell for about double the present price of standard tubes.

MYLE-MAKERS FOR FORDS

Chicago, Sept. 5—The Myle-Maker Co. has been incorporated in Illinois with a capital stock of $100,000 to market a new economizer for the Ford. Eugene F. Kline, for many years with the Mahin Advertising Co., Chicago, is president of the new company. Harvey Cory, the inventor of the Myle-Maker and organizer and former head of the Pittsburgh Coal Washing Co., is vice-president. The device was described last week.

INDIANAPOLIS SHOW EXTENSIVE

Indianapolis, Ind., Sept. 1—The fall show, which will be given in a mammoth tent close to the coliseum in the Indiana state fair grounds, September 4 to 8, is to be the biggest show ever staged by the Indianapolis Automobile Trade Association.

More than fifty exhibitors will show nearly 200 products of seventy different factories. The accessories exhibit, which heretofore has taken up much space, will be quite limited to make room for the new models of motor cars.

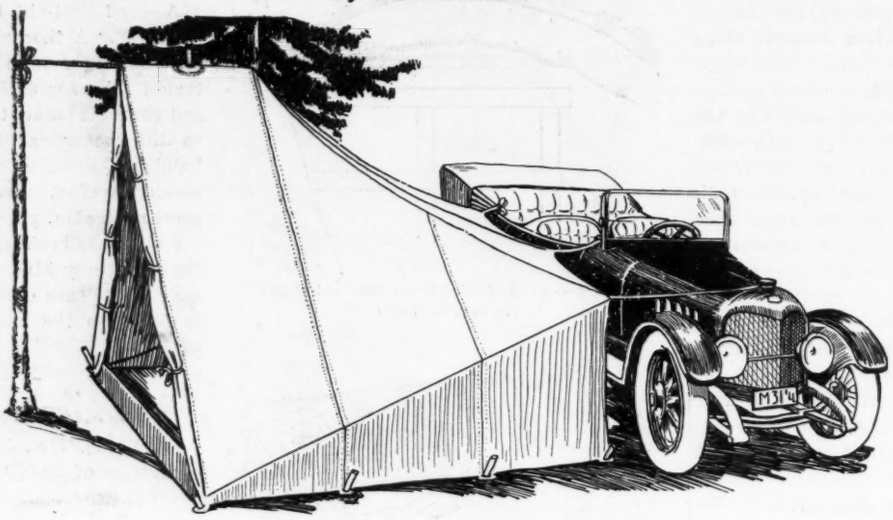
From the Woman's Viewpoint

A Family Sketch of Camping Preparedness

By Ruth Sanders

THE family meditated a flit in the car. There were the Head of the House, his Three-Quarters and the Boy Scout. The Head of the House was for taking a tent and skillet and roughing it, leaving the car in storage nearby. The Three-Quarters preferred a leisurely tour of the hotel region of the hills. The Boy Scout yearned only for outdoor smoke.

There, you have the plot, that is, the initial plot, for the Family, first of all, wanted to travel ensemble. They allowed Reason to mediate and, finally, by means of Arbitration, they agreed to travel in the car, carry a tent and camp and let the Boy Scout smell outdoor smoke.



This tent folds into a package less than 3 feet long

The United Family bought a motor car tent of green Egyptian waterproof cloth for $30. It was made like a canoe tent, only with higher walls. The salesman promised them they could guy it to the car, and they thought that was just what they were looking for. Ample room for three cots insured an abiding place for the Head of the House, his Three Quarters and the Boy Scout when they should grow tired of motoring and wish to tent on the old camp grounds.

A Waterproof Floor

A waterproof ground-cloth was sewed permanently to the tent with a 9-inch sill in front to prevent wind, rain, or pests from coming inside, and the Family thought this was particularly great, for the storm curtains would protect the car when necessary and they could make an outdoor sleeping-porch, if so wished. The tent was 7 feet high in front, 7 feet deep, 3 feet high at the rear corner and 3½ feet at center. A short ridge pole, a 3-jointed upright and guy ropes supplemented the steel tent pegs which came in the tent bag. Rolled, the tent was 8 inches in diameter and 30 inches long and weighed 17½ pounds.

Now, it developed that one reason the Three Quarters did not want to get far from the hotel region was that she hated to have no icebox. But the first thing the Head of the House did, almost, was to get a motor restaurant and icebox combined. It was just right to place under the robe rail of the tonneau. The inner lining was of polished nickel-plated zinc. The removable ice compartment had a cover of hardwood finish, forest green, and the bottom, which was also hardwood, had two coats of waterproof paint. The Head was assured that one piece of ice would keep the contents cold 24 hours. For this insurance, so to speak, that is, an icebox 20 by 10 by 11½ inches he paid $9.25. There was a larger one for $13, but the Family didn't need it.

The Boy Scout, for all that he yearned only for outdoor smoke, demanded the purchase of an outfit which bore his label,

Light, compact and durable

"Boy Scout." It was a special aluminum outfit with steel handles which would not rust, he urged in its behalf, quoting Others. It consisted of a frying pan, a deep plate, coffee pot, cup, fork and spoon. All nested and could be packed in a carrying bag. For this addition, the Head paid $2.25.

One of the Family, it doesn't matter which, found what seemed quite unique and too good to miss. Horrors of camping! It was a lighting outfit for camps, and time held out little chance for it beside the bright electric lights of the car. But the generator and all were only $5 and the Family unearthed a desk light, so they decided to take water tank, carbide container, gas bracket, connections and the 6 feet of tubing along. Of course, it did weigh 4 pounds, but it was such a novel idea to have a reading lamp in camp. Besides, the Boy Scout had long had his eyes on such an outfit for his own particular use, and he thought this would be as good a time as any to get it.

Solid alcohol packed in friction tins was the next purchase. And this promised to have plenty of use, what with heating water, soup, tea and other things. The flame was a hot one and burned for 1½ hours, they were told. A cooking pan of metal with folding handles on the sides and a lid, together with a folding metal stand that supported the pan and alcohol fuel, summed up the convenience. The stand and fuel nested inside the pan. Fuel, pan and stand weighed 20 ounces. The fuel cost 10 cents for each 5 ounces; the pan held 1½ pints and was $1.

For First Aid

While they were shopping, the Boy Scout remembered his first-aid lessons and suggested they buy something with which to give first-aid. They picked out a Tabloid case containing bandages, dressings, aromatic ammonia, borofax, plaster, protective skin and other aids. In the metal case, everything weighed 1¼ pounds and cost $3.75.

To make room in the car for the necessaries which were to come later, the old water bucket was discarded for a collapsible pail and an African water bag. The pail held 10 quarts and cost $1.50, while the bag had a capacity of 5 gallons and was $2.

Although the Boy Scout, who toward the

last seemed to be engineering the trip even if he did yearn only for outdoor smoke, protested against this expenditure as useless since he already had one, another cooking outfit was bought. It may have been because it was said to be "the only pocket-size cooking outfit ever constructed." There were a folding broiler rack with legs which stuck into the ground, two frying pans which fitted together and formed a roasting pan, one large vessel for boiling liquids or stewing, and two drinking cups with detachable handles. These, too, nested together and fitted in the boiling vessel, leaving enough space for smaller articles. It cost $2 and measured 2 by 4⅛ by 8¼ inches, weighing 31 ounces.

Last, but not least. In spite of the fact that she set her foot down here and said everything else in the way of living supplies must come later, the Three Quarters made the last purchase. And of all things to buy along with tents and camping auxiliaries was this loungy, rakish, knockabout hat for women—to quote the salesman—that she did get! Oh, yes, its weight was 3 ounces, and it cost $3.50.

That was the last straw—it was really Madagascar straw—but they had lots of fun and got some serviceable articles. In case you should desire to go and do likewise, you might try the same place they did, which was Von Lengerke & Antoine, 128-132 South Wabash avenue, Chicago.

Beauty Hints for the Woman Motorist

No. 4

What is known as the "soap cream" treatment is good for local irritation brought on by exposure to the sun or wind. Several face soaps are recommended for this, among them Woodbury's, Palmolive, Sayman's and others whose advertisements you have been sure to read. Instead of rinsing all the soap from the face after washing it in soapy water, the lather is applied directly to the face and allowed to remain on all night. Or, after vigorously rubbing in the cream formed by making a stiff lather from the soap cake, it is rinsed off then, to be followed by a brisk rubbing of the skin up and outward with a piece of ice.

Such treatment clears the face wonderfully and, to a certain extent, at once. Of course, some soaps are injurious to the skin, especially to the dry skin, and you should be very careful to know that your case will permit this rather heroic treatment before using it. This method, however, has been recommended often for those with oily, moist skin.

This coast rookie motors

From Sunset Land

"All Dressed Up and Everywhere to Go"

SOMETHING new under the sun. Nobody would say this fair damsel was all dressed up and had nowhere to go, for she is a motoring soldierette and there is always work for the man or maid in military clothes to do. Her car also contains the spirit of preparedness. It is a Studebaker of the landau-roadster type, and the owner has this advantage: With the top up and the side windows raised, the driver is further protected, or "prepared," against contrary weather.

Out on the coast the summer has been a busy season, just as it has been a busy season along—or around, would you say?—the lakes which offer bathing advantages. Service schools for women rookies have formed part of the crowded program of the Pacific miss, who has had her own preparedness activities. This picture of a motoring soldierette was snapped out on the coast. The costume shown is being worn there to some extent, it is said. Though the photograph does not show it, the soldierette, as California calls her, was snapped "at home," with an immense cannon on the wall and a sentry not far away.

One suspects that things are not just what they seem in this pleasing scene, for conditions are most too ideal for a puncture to be the matter under consideration. Perhaps the soldierette has a groom for her mount, however, and merely poses thus to show ownership.

The combination is another sign of the modern trend to substitute the car for the horse. This owner might be dressed for a canter instead of for a spin.

THE SIMPLE MOTOR LUNCH

The lunch is no small part of the motoring trip. It may be that you are merely going a half-day distance and wish to be prepared with your own refreshments. Or you may be stopping somewhere and wish to carry your next meal with you.

Recognizing the fact that it is sometimes hard to think of even a simple menu on the spur of the moment and further hard to get one filled at the ordinary stopping place in the small town you must invariably strike some time or other, suggestions such as can be followed easily will appear in these columns from time to time. As a first suggestion, why not try this menu:

Grape Fruit Egg Salad
Pimento Sandwiches
Salted Almonds Cheese Straws
Hydrox Cakes Ripe Figs
Coffee

Of course, the grape fruit should be cut just before it is served. The salad can travel in its own tin; sandwiches in their own oiled wrappers. The coffee can be kept hot or cold in a thermos bottle enroute, or you can heat it over a small camp fire if you care to do so.

Above—Plaits make this tan silk duster novel. Notice back view. Price, $15. Right—Wide skirts are popular, and this coat has a 100-inch sweep at the bottom. Gray, brown, and Oxford plaids

Guaranteed to be waterproof. Gray or tan rubberized cloth with plaid lining. Price, $15

The business man may wear this coat motoring as well. Waterproofed foreign gaberdine cloth

Men's Motoring Garb for Mild Fall Days

Photos by Lazarnick, N. Y.

Styles on this page from Gimble Bros., New York

Who wouldn't think this Aquascutum English coat roomy enough? It comes in two styles, with and without raglan sleeves. Price, $28

Right—Raglan sleeves and silk pongee or mohair give the newness to this duster. Prices, $3.95 to $25

Styles on this page from Saks & Co., New York

Left—If the motorist prefers a double-breasted duster, here is one in mohair and silk pongee. Prices, $3.95 to $25

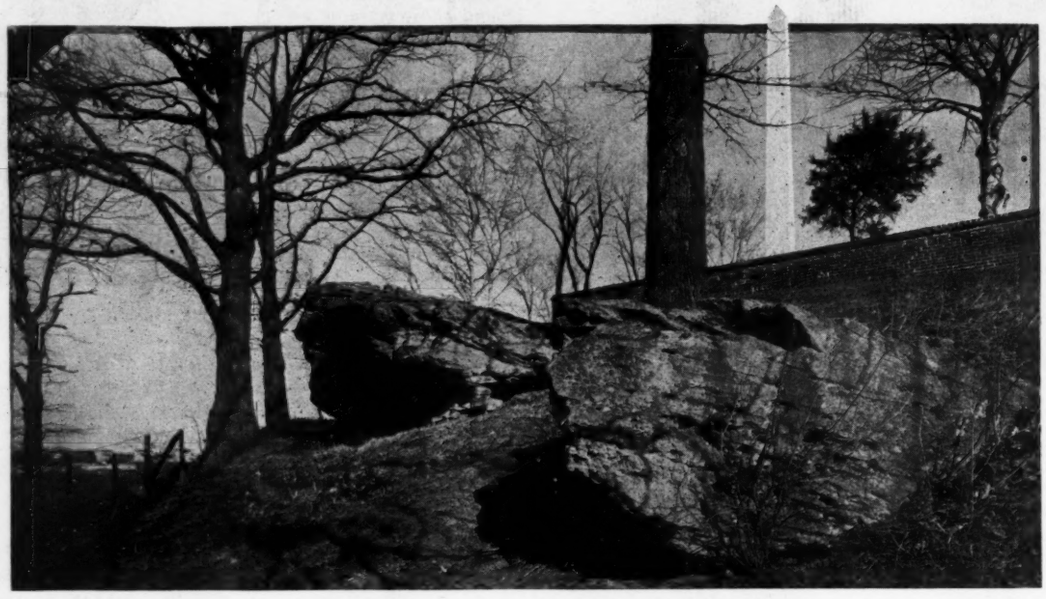
Left—This English tweed hat was made in London, but it is for American motorists. Price, $2. Right—A stitched brim characterizes this tweed hat

Photos on these three pages are by Lazarnick, New York

HISTORICAL FREDERICKSBURG

A City Without a Parallel

By William K. Gibbs.



Rocks at Fredericksburg where Mary Washington sat to view the sunset. Note monument, erected in her memory, in the background

Birthplace of Washington and Scene of Many Notable War Achievements, Civil and Revolutionary

BIRTHPLACE of our first president, home of nearly a score of men prominent in this country's affairs, scene of more history-making events than any other American city—such is the reputation of Fredericksburg, Va. Americans, who are proud of the grand traditions and heroic memories that crowd the country's history, search as they may, can find no more hallowed ground on which to hold communion with the past than this old Virginia city. Just when the first white man visited what now is Fredericksburg is not known, but the general impression is that Captain John Smith of Pocahontas fame was the first to land on this now historic spot, in 1608.

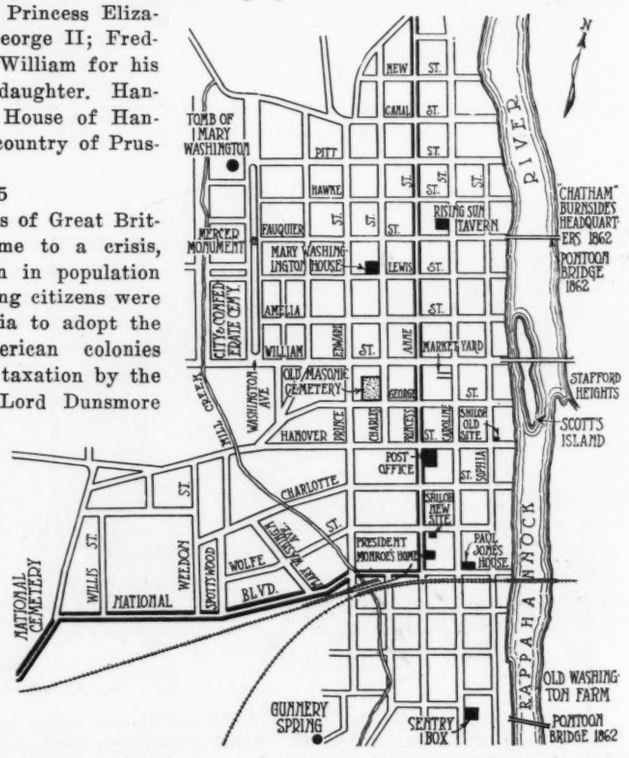
City Has Novel History

To tell you of the Fredericksburg of today and not the Fredericksburg of yesterday, yesteryear, or yester-century, would be a mistake. So prolific has this city been in novel happenings, stirring events and peculiarities that volumes have been written about it. In this brief story only the more prominent facts can be given. The coming of Captain John Smith did not mark the beginning of the city. In 1681 a fort was constructed, but it was not untill 1727 that Fredericksburg was incorporated. It was named at that time for Frederick, Prince of Wales, son of George the Second, by which act the people showed their attachment to the royal family of England. But this was not all; they emphasized that attachment by calling nearly every street in the original survey of the town after some member of the royal family, or some country with which English royalty was closely allied. Sophia street—see the map—was named for a sister of George II; Caroline for his wife; Princess Anne for one of his daughters; and Prince Edward for his grandson. The cross streets were named, Princess Elizabeth for a daughter of George II; Frederick for his oldest son; William for his second son; Amelie for a daughter. Hanover was named for the House of Hanover and Prussia for the country of Prussia.

Citizens Prominent in 1775

In 1775, when the affairs of Great Britain and the colonies came to a crisis, Fredericksburg had grown in population and prosperity. The leading citizens were among the first in Virginia to adopt the principle that the American colonies ought to be exempt from taxation by the mother country. When Lord Dunsmore secretly removed powder from the public warehouse in Yorktown, citizens of Fredericksburg went before George Washington and offered their services, but were advised to wait for the assemblage of a congress, which would decide upon a general procedure for resisting the enemy.

The first act of the Virginia legislature after that colony became a republic was to grant Fredericksburg a charter, which provided for a mayor, recorder, board of aldermen and a common council. These were made a body politic and were to have perpetual succession. From these were



Map of Fredericksburg showing route of National road through city

Remnants of the fortifications on Marye's heights used in the civil war

selected certain ones to make a tribunal known as the "hustings court," which had jurisdiction where the amount in controversy exceeded 1,000 pounds of leaf tobacco, or its value in money. It was provided in the charter that persons elected to office and who would not serve should be fined—a mayor-elect, fifty pounds; recorder, forty pounds, and so on down a graduated scale.

Whipping Post and Stocks

Methods of punishment in those days were unique. In 1785 orders were given to erect a whipping post, stocks and a ducking stool. The whipping post was used mainly for the slaves who were guilty of small infractions of the law, but for aggravated offences the penalty was, "thirty-nine lashes on the bare back, well laid on," to which was added burning in the left hand in the presence of the court. The whipping post is said to have been used as a punishment for persistent absence from church.

The stocks were for punishing white persons for petty offences. Holes in the stocks were provided for the wrists and ankles of the offenders and during the period of confinement people gathered around and jeered the offender. The ducking stool was for punishing common scolds, refractory women and dishonest tradesmen. Those punished by this method were ducked in the Rappahannock river, and there was always a crowd to witness these proceedings.

In 1806 the legislature provided for an election of a mayor, recorder and eight justices of the peace "to serve during good behavior."

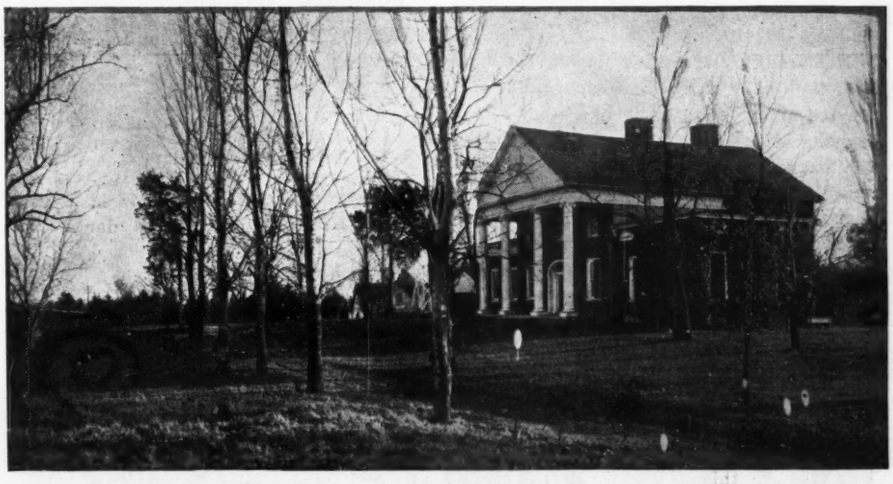
That charges of graft were not unknown a century ago is evident by a congressional investigation of the Fredericksburg postoffice in 1820. After the War of 1812, mail increased in quantity and extra help was needed to handle it. This help was gotten and the scandal started. James Monroe was then president and Return J. Meigs, Ja., postmaster general. All the mail for Virginia, Tennessee, North and South Carolina and Georgia went over the route from Washington to Fredericksburg, and after long hearing, the extra help put on was found justified, and the charges of graft against the Fredericksburg postmaster were quashed.

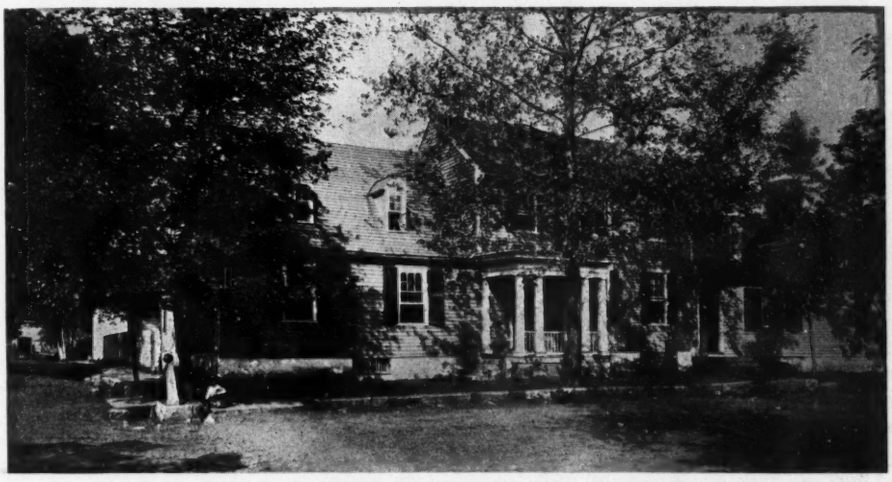
It is interesting to note that even as late as May, 1838, the prices for meals, lodging, wine, etc., sold at the taverns, were fixed by the courts. Further, it may be said, that the city officials were paid in tobacco. Thus, the attorney for the commonwealth received 2,000 pounds of tobacco per year, etc. Tobacco in those days was the same as money. It also is of interest to know that the funds for paying the first policemen this city ever had were obtained by levying 2 per cent of the rents received by the various persons with the jurisdiction of the city court.

Not until May, 1816, did paper money supersede tobacco, and tobacco warehouse receipts, as legal tender.

Jail a Nuisance

In 1803 a grand jury brought in an indictment against the jail as being a nuisance, and charged that a colored criminal, who had been confined therein, had contracted a disease of which he afterwards died. The indictment was acted upon and





Above is seen "Brompton," known in war history as Marye's heights, occupied December 13, 1862, by confederates when 9,000 federal troops were lying killed or wounded in front. Below is the home of Mary Washington and the house in which she died in 1789

the jail torn down and a new one constructed.

Fredericksburg's part in the Civil War was notable. As soon as the confederate capital was removed to Richmond, the city became at once, and continued throughout the entire war, the objective point of the federal invasion of the South. It was apparent, therefore, from an inspection of the map that Fredericksburg would necessarily witness many bloody acts in the direful drama, for it is situated half way between Washington and Richmond. If ever grim-visaged war showed its sordid front, it was at this foredoomed, devoted town. This town was the immediate theater of one of the bloodiest battles of the Civil War, on December 13, 1862. In the cannonade that ushered in that battle 180 guns, some of them siege pieces carrying 70-pound projectiles, for 10 mortal hours poured a pitiless storm of shot and shell on this helpless town. No such cannonading, save that which preceded Pickett's charge at Gettysburg, ever was heard on this continent. Four and one-half months after that bloody baptism, the town witnessed the desperate, but unsuccessful endeavor of General Sedgwick to march his corps of 30,000 men to the relief of Hooker, at Chancellorville, and it was the hospital for 15,000 wounded men from General Grant's army in the wilderness campaign in May, 1864.

Numerous other events during the Civil War took place in Fredericksburg, but they are too many to chronicle in a story of this length. A tribute to the city is found in the words of General Robert E. Lee, who said, in speaking of the privations and sacrifices of the citizens of this city:

"History presents no instance of a people exhibiting a purer and more unselfish patriotism, or a higher spirit of fortitude and courage than was evinced by the people of Fredericksburg. They cheerfully incurred great hardships and privations and surrendered their homes and property to destruction rather than yield them in the hands of the enemies of their country."

Historic Rising Sun tavern in Fredericksburg, Va., one of the oldest buildings in the city

Monument at Fredericksburg, Va., marking spot where Stonewall Jackson was wounded

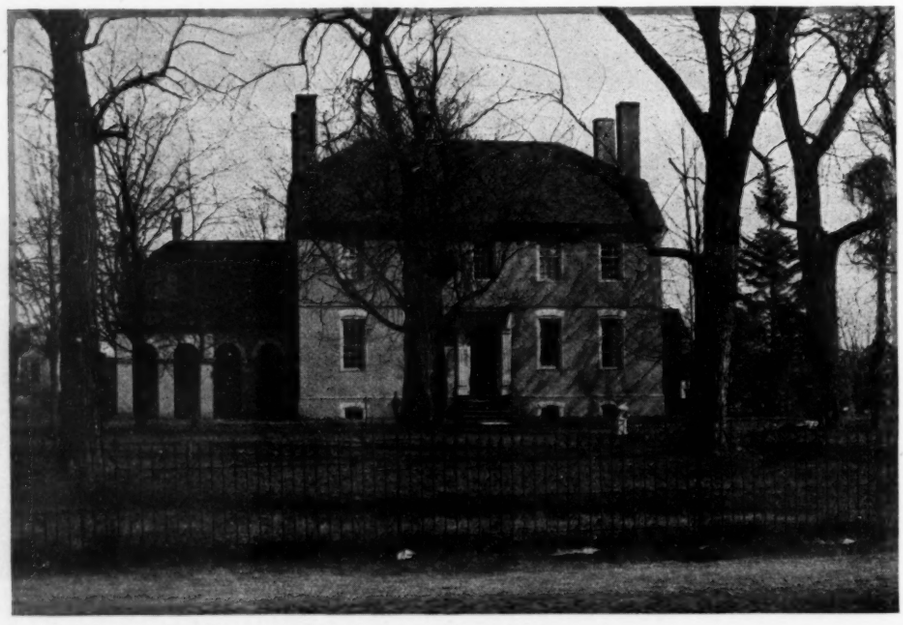
This city, besides being the birthplace of George Washington, was the home and birthplace of Thomas Jefferson, James Madison, James Monroe, Zachary Taylor, Chief Justice John Marshall, the Lees of the Revolution, Patrick Henry, Henry Clay, Matthew Maury and Robert E. Lee. Within a short distance of this city is the birthplace of William Henry Harrison, John Tyler and Winfield Scott.

You do not have to search Fredericksburg for its historical points; they are everywhere present. Mary, mother of Washington, is buried about a stone's throw from "Kenmore," built in 1740, and one time the home of Betty Washington Lewis, sister of Washington. The spot was selected by Mary Washington herself declaring it to be preferable to any location, as it could never be cultivated, being near a rocky crag, a part of the original Kenmore land. The women of America obtained a fund for the erection of a monument to her memory, this being unveiled May 10, 1894.

The plain, old-fashioned dwelling at the corner of Charles and Lewis streets was the home of Washington's mother, until her death in 1789. "Kenmore" was built in 1740 by Colonel Fielding Lewis, an officer who commanded a division at the siege of Yorktown, where Cornwallis surrendered. It is said the bricks were brought from England, but this cannot be confirmed. However, the interior stucco work of this colonial mansion has stood for over a century and a half and is supposed to have been done by English experts.

The Masonic lodge in which George Washington received his first degree as a Mason, November 4, 1752, has a cabinet of rare and valuable relics of Washington's time, which may be seen by applying to the master of the lodge.

Rising Sun tavern, one of the oldest buildings in the city, is where General George Weedon, years before the revolution, kept hotel. This was the stopping place of Washington, LaFayette and other colonial dignitaries. "Chatham" is a



"Kenmore," built in 1740, home of Betty Washington Lewis

magnificent colonial estate built in 1730 on a grant of several thousand acres from King George of England. This building is conceded to be the most beautiful specimen of the Georgian colonial architecture in America. It was once General Burnside's headquarters.

There are many other interesting places to be seen in this wonderful old city. There is the home of President Monroe, of John Paul Jones, and the St. George cemetery in which is to be found a grave marker the inscription on which has puzzled all who have seen it. It says, "Charles M. Rathrock departed this life September 29th, 1084, aged 3 years." The will of Mary Washington is worth reading and can be seen in the clerk's office of the corporation court.

There are only two ways of getting into Fredericksburg on any main highway; one is from Washington and the other from Richmond. The road from Washington to Fredericksburg is all improved, except about 11 miles, and this stretch is very bad even in dry weather and should not be attempted when wet. The hotel people in Washington, Richmond and Fredericksburg raised about $700 last year and fixed up some parts of this road, but it is understood that the natives around that vicinity destroyed these improvements and the road is even worse than last year.

Route to Follow

The road from Richmond to Fredericksburg is fine. There is a new hotel in Fredericksburg that compares favorably with any through the South. In going from New York to Fredericksburg you would pass through Philadelphia, Wilmington, Baltimore and Washington. In going from the west, say Pittsburgh or Cleveland, there are two alternate routes: one via Greensburg, Bedford Springs, Hagerstown, Frederick and Washington; the other via Uniontown, Cumberland and Hagerstown. From the south, say Atlanta, Ga., there are two options: one via Augusta, Columbia, Camden, Cheraw, Pinehurst, Raleigh, Petersburg and Richmond; the other via Greenville, Charlotte, Greensboro, Lynchburg and Richmond. The first option will take care of tourists going from Florida points and joining the route at Augusta.

Answers to Inquiries for Road Information

Walnut, Ill.-Kimball, Neb.

WALNUT, Ill.—Editor Motor Age—Kindly give the best route from Walnut, Ill., to Wichita, Kan., and from Wichita, Kan., to Kimball, Neb. Also give the number of miles between these points.—F. E. Golden.

In going from Walnut, Ill., to Wichita, Kan., we advise that you go west through Yorktown, Springhill, then down through Moline, Davenport, Muscatine, Columbus City, Washington, Brighton, Fairfield, Ottumwa, Foster, Centerville, Seymour, Lineville, Princeton, Trenton, Chillicothe, Plymouth, Polo, Excelsior Springs, Liberty, Kansas City, Olathe, Ottawa, Waverly, Emporia, Cottonwood Falls, Florence, Newton, Wichita. This is about 680 miles.

In going from Wichita to Kimball, Neb., we advise that you go north to Newton, McPherson, Salina, Glasco, Concordia, Belleville, Hebron, Geneva, Fairmont, then west to Harvard, Hastings, Kensaw, Kearney, Lexington, Gothenburg, Bignell, North Platte, Paxton, Ogallala, Big Springs, Chappell, Sidney, then to Kimball. The mileage for this is about 575 miles.

Volume 5 of the Automobile Blue Book will give you complete running directions for both trips.

Industry, Ill.—Nebraska

Industry, Ill. — Editor Motor Age—Kindly give the best route from Industry, Ill., to Seward County, Neb.—J. S. McCreight.

In going to Stewart County, Nebr., we advise that you go north through Macomb, La Harpe, Ft. Madison, Farmington, Mt. Sterling, Pulaski, West Grove, Centerville, Corydon, Leon, Mt. Ayr, Conway, Clarinda, Shenandoah, Sidney, Nebraska City, Syracuse, Unadilla, Lincoln, Emerald, then to Seward, the county seat.

Volume 5 of the Automobile Blue Book will give you directions through this section of the country.

Detroit, Mich.—Los Angeles, Cal.

Lapeer, Mich.—Editor Motor Age—Kindly give the best route to San Francisco and Los Angeles from Detroit, starting from the middle of October to the First of November.—W. E. Brown.

In going from Detroit to California, starting the middle of October or the first of November, the best way for you to go is to go to Los Angeles, and if you wish to go to San Francisco, take the Southern routing. We advise that you go to Kansas City. To do this you can go either via Chicago, Davenport, Ottumwa and Chillicothe, or you can go via Ft. Wayne, La Fayette, Champaign, Litchfield, St. Louis, Columbia and Marshall.

From Kansas City, we advise that you follow the Santa Fe trail to Los Angeles, going through Ottawa, Emporia, Florence, Newton, Hutchinson, Ellinwood, Dodge City, Syracuse, La Junta, Trinidad, Raton, Las Vegas, Santa Fe, Albuquerque, Socorro, Magdalena, Springerville.

From here you can go via Globe, Phoenix, Yuma, El Centro and San Diego, or you can go via Winslow, Flagstaff, Grand Canyon, then over the Needles-Barstow route into Los Angeles.

Volumes 4 and 5 of the Automobile Blue Book will give you the complete routing for this trip.

Toledo, O.-Sarasota, Fla.

Sault Ste. Marie, Mich.—Editor Motor Age—Kindly give me the best route from Toledo, O., to Bradentown or Sarasota, Fla.; also the best route from East Liverpool, O., to Sarasota, Fla. How late in the fall or early winter is it advisable to take such a trip with a motor car? Which route of the two mentioned would be the better, late in the season?—A. McCaudless.

In going from Toledo down to Sarasota, Fla., we advise that you go south to Fostoria, Findlay, Kenton, Bellefontaine, Urbana, Springfield, Zenia, Lebanon, Cincinnati, Walton, Williamstown, Corinth, Georgetown, Lexington, Shakertown, Harrodsburg, Perryville, Springfield, Bardstown, New Haven, Buffalo, Pikeview, Bear Wallow, Cave City, Glasgow Junction, Bowling Green, Russellville, Springfield, Nashville, Murfreesboro, Manchester, Tracy City, Jasper, Chattanooga, Dalton, Adairsville, Cartersville, Marietta, Atlanta, Jonesboro, Hampton, Griffin, Milner, Barnesville, Forsyth, Macon, Perry, Hawkinsville, Abbeville, Fitzgerald, Douglas, Waycross, Folkstown, Jacksonville, St. Augustine, Hastings, Daytona, DeLand, Orlando, Winterhaven, Bartow, Bowling Green, Arcadia, then west to Sarasota.

You will find it best to take the trip in the late fall or early winter before the heaviest part of the rainy season starts.

Volumes 4 and 6 of the Automobile Blue Book will give you complete running directions for this trip.

Pickering-Kirksville, Mo.

Pickering, Mo.—Editor Motor Age—Kindly give me the best route from Pickering to Kirksville, Mo. Also, kindly advise best route to Wilmington, N. C., via Birmingham, Ala., from Pickering, Mo., and from Wilmington, N. C. direct to Pickering, Mo.—Edward R. Kelley.

In going from Pickering to Kirksville, Mo., we advise that you go south to Maryville, then east through Clyde, Stanberry, Darlington, McFall, Pattonsburg, Coffey, Edinburg, Trenton, Humphreys, Milan, Green City, Novinger to Kirksville.

In going to Wilmington, N. C., via Birmingham, we advise that you go south to Maryville, Savannah, St. Joseph, Dearborn, Trimble, Nashua, Kansas City, Independence, Levasy, Lexington, Dover, Marshall, Boonville, Columbia, Fulton, Danville, Warrenton, Wentsville, St. Louis, Belleville, Marissa, Pinckneyville, Murphysboro, Grand Tower, Jonesboro, Anna, Cario, Paducah, Cadiz, Hopkinsville, Clarksville, Springfield, Nashville, Columbia, Pulaski, Athens, Decatur, Falkville, Garden City, Oneonta, Village Springs, Birmingham, Springfield, Ashville, Anniston, Edwardsville, Atlanta, Athens, Washington, Thomson, Augusta, Batesburg, Columbia, Camden, Cheraw, Hamlet, Maxton, Lumberton, Chadbourn, Wilmington.

Returning direct would advise that you retrace your steps to Atlanta and then cut northwest through Cartersville, Adairsville, Dalton, Chattanooga, Tracy City, Manchester, Murfreesboro to Nashville, here picking up the going trip and following it to Pickering.

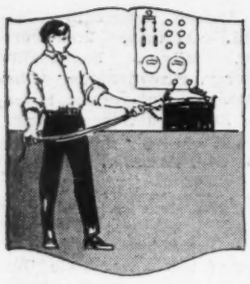
Volumes 5 and 6 of the Automobile Blue Book will give you complete running directions.

St. Louis, Mo.-Fresno, Cal.

Grayville, Ill.—Editor Motor Age—Kindly give me the best route from St. Louis, Mo., to Fresno, Cal. Expect to start October 1.—R. M. Rudolph.

In going from St. Louis to Fresno, Cal., October 1, we would advise that you go west through St. Charles, Wentzville, Warrenton, Danville, Fulton, Columbia, Rocheport, Boonville, Marshall, Dover, Lexington, Levasy, Independence, Kansas City, Olathe, Ottawa, Waverly, Emporia, Florence, Newton, Hutchinson, Lyons, Ellinwood, Great Bend, Larned, Kinsley, Dodge City, Cimarron, Garden City, Lakin, Syracuse, Coolidge, Lamar, La Junta, Pueblo, Walsenburg, Trinidad, Raton, Springer, Wagon Mount, Las Vegas, Santa Fe, Albuquerque, Socorro, Magdalena, Springerville, Holbrook, Winslow, Flagstaff, Grand Canyon, Williams, Ashfork, Kingman, Needles, Bagdad, Barstow, San Bernardino, Pasadena, Los Angeles, Saugus, Elizabeth Lake, Mojave, Tehachapi, Bakersfield, Famosa, Delano, Tulare, Goshen Junction, Raver, Selma and Fowler into Fresno.

Volumes 5 and 8 of the Automobile Blue Book will give you complete running directions for this trip.



Electrical Equipment of the Motor Car

By David Penn Moreton & Darwin S. Hatch.

Editor's Note—Herewith is presented the eleventh installment of a weekly series of articles which began in Motor Age issue of June 29, designed to give the motorist the knowledge necessary to enable him to care for and repair any and all of the electrical features of his car, no matter what make or model it may be. At the conclusion of this series, "Electrical Equipment of the Motor Car," with additions, will be published in book form by the Class Journal Co., Chicago, in a size to fit the pocket conveniently.

Part XI—Electromagnetism

Solenoids carrying current exhibit all the magnetic effects that are possessed by permanent magnets. They attract and repel magnets, pieces of wire and steel, other solenoids in which there is a current, etc. The magnetic lines pass through the solenoid from the south pole to the north pole, and outside the solenoid from the north pole to the south pole, just as in a permanent magnet.

A simple rule by which the polarity of a solenoid may be determined, if the direction of the current in the winding is known, is as follows: If you face one end of the solenoid and the current is around the winding in a clockwise direction, the end of the solenoid nearest you will be the south pole and the other end will be the north pole. If the direction of the current in the winding is counter-clockwise the end nearest you will be the north pole and the other end the south pole.

Another simple rule for determining the polarity of a solenoid is as follows: Grasp the solenoid with the right hand, placing the fingers around it in the direction of the current; the thumb will then point in the direction of the north pole, as shown in Fig. 88.

Magnetomotive Force

When a current of electricity is produced in the winding of a solenoid, it becomes magnetized and lines of force pass through the interior from the south to the north pole and return outside from the north to the south pole. The current produces a force which drives the lines of force, called *magnetic flux,* through the paths which they take, called the *magnetic circuit,* just as the electromotive motive force in the electrical circuit causes the electricity to flow through the electrical circuit. Magnetic flux is measured in a unit called the maxwell, and one maxwell simply means 1 ounce of force. This force, due to the electrical current, is called *magnetomotive force,* and it is usually abbreviated to M. M. F.

The magnetomotive force of a solenoid is directly proportional to the product of the number of turns in the solenoid and the current in amperes the turns are carrying. If the number of turns in the winding of the solenoid is represented by the letter N and the current in the winding by the letter I, then the magnetomotive force will be greater or less as the product $N \times I$ is greater or less. The product of the current and turns is called the *ampere-turns,* and the same magnetomotive force is obtained with a current of 500 amperes through 1 turn, 25 amperes through 20 turns, 1 ampere through 500 turns, etc. In each of the above cases the magnetomotive force is 500 ampere-turns.

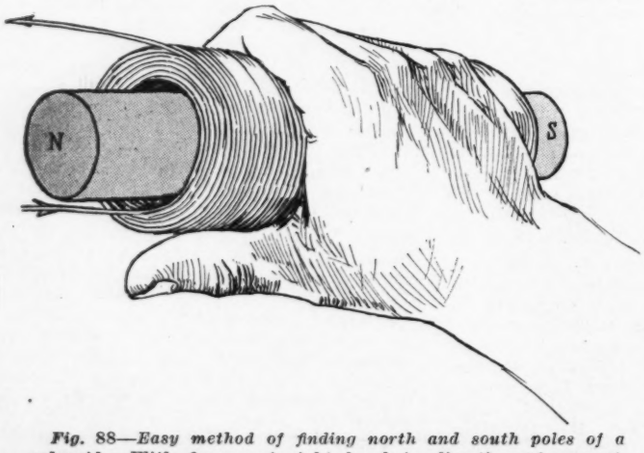


Fig. 88—Easy method of finding north and south poles of a solenoid. With fingers of right hand in direction of current, thumb points to north pole

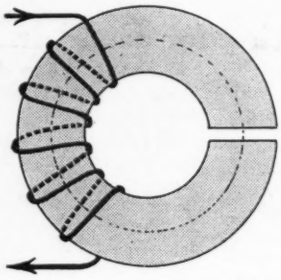


Fig. 89—Two reluctances in series

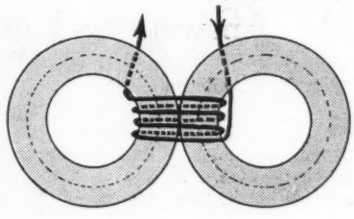


Fig. 90—Two reluctances in parallel

In making magneto calculations, magnetomotive force is usually measured in a unit called the gilbert. If a magnetomotive force is expressed in ampere-turns, it may be expressed in gilberts by multiplying the ampere-turns by 1.2566. Thus the magnetomotive force of 2 amperes in the winding of a solenoid of 50 turns is 100 ampere-turns or 125.66 gilberts.

Reluctance

The magnetomotive force acting on any magnetic circuit encounters a certain opposition to the production of a magnetic flux, just as the electrical pressure encounters a certain opposition in the electrical circuit to the production of an electrical current. The opposition offered by the magnetic circuit is called its *reluctance,* and it is represented by the letter S. The reluctance of a magnetic circuit depends upon the material composing the magnetic circuit and upon the dimensions of the magnetic circuit. It varies directly as the length of the circuit, inversely as the area of the circuit, all other conditions remaining constant, and inversely as a property of the material called its *permeability,* which will be defined later, represented by the symbol M. The unit in which reluctance is measured is called the *oersted.*

Permeability

The number of lines of force passing through each square centimeter of cross sectional area of the solenoid when there is a magnetic core in the solenoid is called the *field strength.* The unit in which the field strength is usually measured is the *gauss,* and it is

equal to 1 line of force per square centimeter. Field strength is frequently expressed as so many gilberts per centimeter; that is, it is equal to the magnetomotive force acting on a magnetic circuit divided by the length of the circuit in centimeters. Field strength is represented by the letter H. Any one of the following equations may be used in determining the value of the field strength:

$$H = \frac{\text{total magnetic flux}}{\text{area in square centimeters}} = \frac{\text{maxwells}}{\text{square centimeters}}$$

This equation holds true for a uniform magnetic field but not for a non-uniform magnetic field.

$$H = \frac{\text{magnetomotive force}}{\text{length}} = \frac{\text{gilberts}}{\text{centimeters}}$$

or

$$H = \frac{1.2564 \times \text{ampere-turns}}{\text{centimeters}}$$

If the magnetomotive force of a solenoid having a non-magnetic core can be maintained constant and an iron core be introduced in place of the non-magnetic core, the magnetic flux through the solenoid will be greatly increased.

The number of lines of force per square centimeter in the magnetic material is called the *induction density* and it is usually represented by the letter B. The permeability of a material may be thought of as the ability of the material to conduct magnetic flux as compared to air. In making up a good magnetic circuit, it is always desirable to have materials of high permeabilities, in order that the reluctance of the magnetic circuit may be low.

Ohm's Law for the Magnetic Circuit

The magnetomotive force acting as a magnetic circuit, the reluctance of the circuit, and the magnetic flux produced are related to each other just as the electrical pressure in an electrical circuit, its resistance and the current produced are related to each other. This relation may be expressed as follows:

$$\text{Magnetic flux} = \frac{\text{magnetomotive force}}{\text{reluctance}}$$

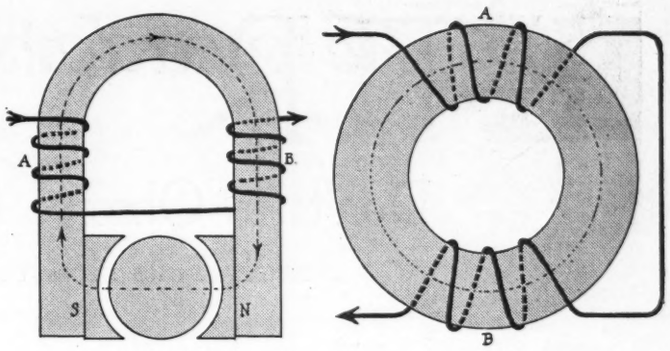
Reluctance in Series and Parallel

A magnetic circuit may be composed of several reluctances connected in series or parallel or a combination of the two methods just as an electrical circuit may be composed of several resistances connected in series or parallel or a combination of the two methods.

If an air gap be cut in an iron ring, as shown in Fig. 89, the magnetic circuit composed of the iron ring and air gap will constitute a magnetic circuit in which two reluctances are in series. The total reluctance of such a circuit is equal to the sum of the reluctances of the different parts, just as the total resistance of a series electrical circuit is equal to the sum of the resistances of the different parts.

If two iron rings be placed side by side and a winding placed about both of them, the two rings will constitute a magnetic circuit in which two reluctances are in parallel. The two rings and winding may be arranged as shown in Fig. 90, but the reluctances of the two rings are still in parallel.

Magnetomotive forces in series and parallel magnetomotive forces may be connected in series and parallel just as electromotive forces may be connected in series and parallel. For example, the magnetomotive force of winding A in Fig. 91 is acting on the same magnetic circuit as the magnetomotive force of winding B. If these two magnetomotive forces both tend to produce a magnetic flux around the iron ring in the same direction, the total magnetomotive force acting on the magnetic circuit will be equal to the sum of the two. If, however, the two magnetomotive forces tend to produce a magnetic flux around the iron ring in opposite directions, the total or effective magnetomotive force acting on the magnetic circuit will be equal to the difference between the two magnetomotive forces. The direction of the effective magnetomotive forces will correspond to the direction of the larger of the two magnetomotive forces.



Figs. 91, right, and 92, left—Magnetomotive forces and reluctances in series

The magnetic circuit shown in Fig. 92 is composed of a number of reluctances in series and two magnetomotive forces in series. Two magnetomotive forces are shown acting in series on two magnetic circuits connected in parallel in Fig. 93. The magnetic circuits of a four-pole generator or motor are shown in Fig. 94. In Figs. 87 to 94, inclusive, the dotted lines indicate the path of the lines of force. The magnetomotive force acting on each of the magnetic circuits in Fig. 94 is equal to the sum of the magnetomotive forces of the two coils wound around the circuit. Each coil is connected to two magnetic circuits in Fig. 94 and only one-half as many ampere-turns are required in each coil with this arrangement as would be required if the coils were wound around the outside portion of the magnetic circuits and around a single circuit instead of two.

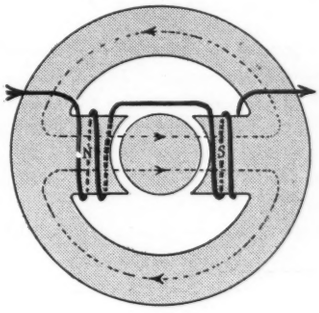


Fig. 93—Two magnetomotive forces in series acting on two reluctances in parallel

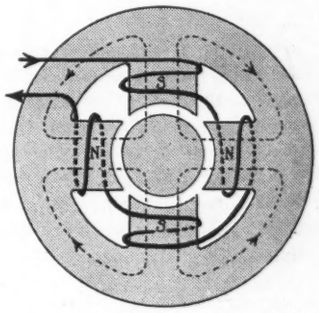


Fig. 94—Magnetic circuits of a four-pole generator

Hysteresis

If a piece of iron be magnetized and the magnetizing force then removed, the induction density does not return to zero value. A magnetizing force must then be applied in the opposite direction in order to demagnetize the iron. The induction density may be built up to the original maximum value but in the opposite direction by increasing the magnetizing force. This lag of the induction density behind the magnetizing force is called *hysteresis*.

This hysteresis property of the iron is supposedly due to a molecular friction in the iron, and it results in the iron heating when it is rapidly magnetized and demagnetized. Certain grades of iron show a less hysteresis property than others and the manufacturers of electrical equipment endeavor to use this kind of iron, all other conditions being equal, when the iron is subjected to a rapid magnetization and demagnetization in the operation of the apparatus.

NEXT WEEK

Part XII of the series on Electrical Equipment of the Motor Car will explain in part how electromagnetism makes current.

The Readers' Clearing House

Don'ts to Observe for Gasoline Economy

Reader Tells How to Get Maximum Mileage

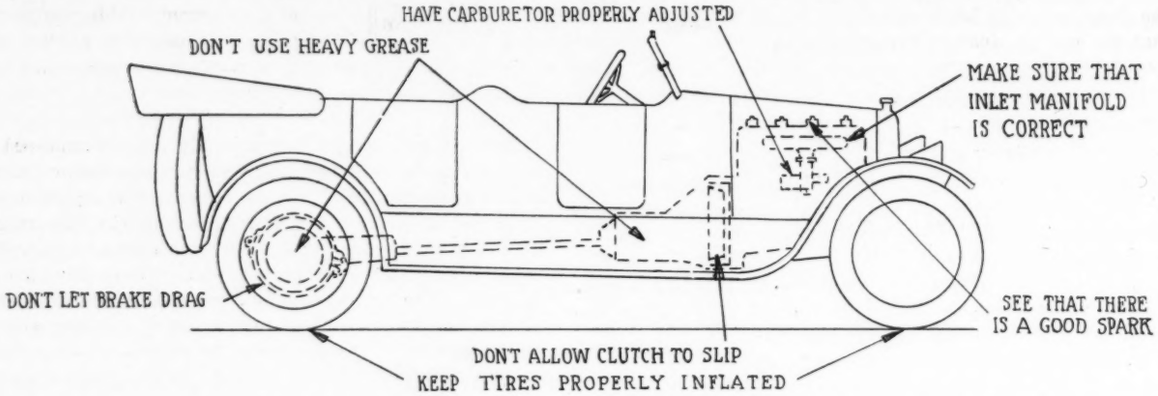

HAVE CARBURETOR PROPERLY ADJUSTED
DON'T USE HEAVY GREASE
MAKE SURE THAT INLET MANIFOLD IS CORRECT
DON'T LET BRAKE DRAG
SEE THAT THERE IS A GOOD SPARK
DON'T ALLOW CLUTCH TO SLIP
KEEP TIRES PROPERLY INFLATED

Fig. 1—Diagram to show what to observe in car maintenance in order to save gasoline

FLINT, MICH.—Editor Motor Age—The high cost of gasoline may in most cases be offset by the car owner if he will carefully go over his car and assure that all its parts are working to their best efficiency. There are many factors that contribute to the waste of gasoline; if these are taken care of the cost per mile of gasoline may be so reduced that the fuel will not be any higher than previous years when it cost half what it costs now.

Poor carburetion is the principal source of waste, and even in the modern cars poor designs of manifold and carbureters exist to an unfortunate degree, but of course to a greater extent on the older cars. To correct this condition it is often necessary to change the carbureter and some times the manifold. The carbureter manufacturer should be consulted, and when possible see the service engineer, and if they advise a change it will pay to do it. Be sure that a competent man adjusts the carbureter, and instruct him to set it for economy and not maximum power, for that will use more fuel and constitute a waste under average conditions. Don't let the engine run for any length of time when you are not driving, for this quickly burns up fuel.

To get the maximum power and economy out of the motor all the bearing and connecting rods must be properly fitted; the valves must be kept in good condition and properly ground in. See that the stems are fitting properly and not worn, for this would admit air in the engine and spoil the carbureter adjustment. The valves should be carefully adjusted. See that the piston and rings are in good condition and do not leak, as the compression pressure must be maintained. The ignition must be properly taken care of, seeing that the spark plugs have the right gaps, and are clean; have the breaker points, or spark regulator, and timing set so that a good spark is obtained, as a good spark means a lot in gasoline economy. The clutch should be examined to see that it has the proper spring attachment and that it does not slip, as the slipping clutch means wasted power. If the car is running along a level road and the clutch is thrown out it will run for some distance before it finally comes to a stop. If it were not for the friction in different bearings, wind and road resistance, the car would continue traveling.

If the bearings are tight they create friction, and this uses power to overcome it, and uses more fuel, so it is seen that the bearings in all parts of the car must be as free as practicable and be properly lubricated. The motor lubrication is self-contained and needs only filling as required. The clutch shifting yoke needs frequent oiling, and set so that it is not dragging and so causing friction.

The gearset should have a medium-weight oil and not grease or any other fibrous compound; likewise, the rear axle should not have a heavy grease put in it, as this consumes considerable power. The wheel bearings need frequent attention to see that they are lubricated properly. A frequent loss of power is in dragging brakes. Have these properly adjusted so that they are free, and do not bear on the brake drums at all.

The tires are friction makers, as their grip on the road drives the car. Tire friction must be kept to a minimum by having them properly inflated. To keep the tires inflated to their required pressure is most essential, as it means both tire and fuel economy. The tires as designed give the maximum amount of traction with the minimum amount of resistance or friction when they are properly inflated.

When the car is driven in hilly districts quite a saving is made, in gasoline, by stopping the motor when going down grade, at the same time, of course, keeping the clutch released.

It is also a good plan to test the car for coasting from time to time on the same grade, so it will be readily seen if everything is working freely. Modern carburetion and attention to the details outlined will go a long way towards offsetting the present high price of gasoline.—Kingston Forbes.

METHODS OF TRAFFIC SIGNALLING

Reader Believes Only Necessary to Signify Left Turn

Memphis, Tenn.—Editor Motor Age—I wish to congratulate you on your very opportune editorial of June 15, "Need of Traffic-Signalling Devices," and I am pleased to note from your issue of Aug. 24 that you will shortly put before the public a model set of traffic rules.

I contend that there is no need of the driver giving a signal for the benefit of vehicles following or for the benefit of the traffic officer only when he intends to turn to the left. Any other signal by the driver, with the exception of sounding the horn, is unnecessary and confusing.

We all know that the driver ahead of us has the right of way between him and the curb on the right—assuming that he is on the right-hand side of the street. It is, therefore, unnecessary to give a signal when turning a corner on the right, or making a stop at the curb on the right.

Every person driving a motor car is expected to keep a sharp lookout ahead and to know that the road is clear at all times.

It would be absurd to expect the driver ahead of us to give a signal of his intention to stop before applying the emergency brake and stopping at once if possible when about to run down someone who had stepped in front of his car. Therefore, why the necessity of a signal indicating our intention to stop? Such a signal would really complicate matters.

Now, a word about the back-up signal. I contend that such a signal would be a dangerous thing to have, unless the driver took the trouble to turn his head and make sure that the way is clear before attempting to back up; then keeping a lookout behind him as long as he continued to move in a backward direction. This, of course, would make the back-up signal unnecessary, further than the usual three honks of the horn, which might indicate one's intention to back-up, but does not give the right to do so until the way is clear.

If, in your opinion, there is a need for motor car traffic-signalling other than outlined above, I shall be very glad to hear from you along that line.—S. J. Sibley.

[Editor's Note—There have been a great many accidents and cars have been damaged many times in city traffic by a car ahead stopping unexpectedly. Similarly there have been many collisions when cars have turned to the left or right when in a line of traffic without giving a signal. On streets in which traffic is heavy there is urgent need that drivers give warning of their intention to turn to either the left or right, or to stop, both for their own protection and for that of following cars. On many of the boulevards of the larger cities, there may be three rows of cars traveling in the same directions and if an inside car were to make a right turn it would cross one or two lines of traffic going in the same direction. At such times a signal of the intention to turn right is imperative.]

ADJUSTMENT OF STROMBERG B-3

Cannot Supplant Buick Oiling System With Grease Cups

Mountain Grove, Mo.—Editor Motor Age—Kindly publish the adjustment of a B3 Stromberg carbureter.

2—Can the oiling system on a model 10 Buick be removed and a system installed with grease cups, where the bearings in the transmission and crankshaft are oiled by small pipes from the present oiling system?

3—What is the gear ratio and the possible speed of a stripped model 10 Buick?—Fred W. Leach.

The Type B Stromberg is a concentric-type carbureter. Refer to Fig. 3. It has a spray nozzle PN mounted in the center of the carbureter, and in the center of the float chamber, with its point $\frac{3}{16}$ inch above the normal gasoline level and surrounded by a modified venturi tube. The nozzle is proportionate in size to the carbureter and is not intended for adjustment.

The level of the gasoline in the float chamber is adjusted at the factory. It should be about $\frac{15}{16}$ inch from the lower edge of the glass marked X. In case the level is obviously wrong, remove the dust cap D and turn the adjusting screw S until

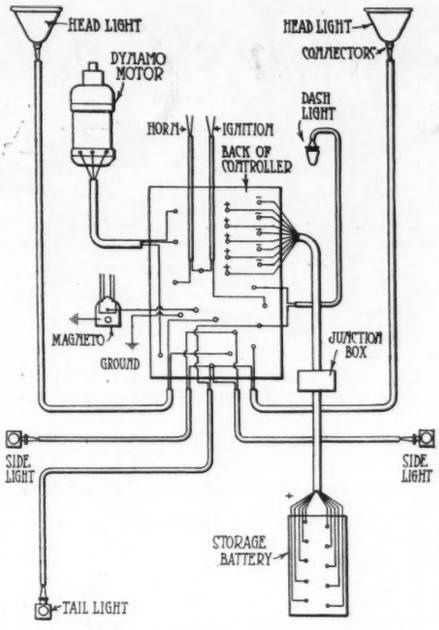


Fig. 2—Diagram to show method of wiring Aplco A-7-5 generator

the proper level is obtained. If the gasoline is too high screw the nut down, and, of course, reverse the operation if the level is too low. There are low and high speed adjustments. For low speed, turn up the adjusting nut A until the spring S1, which is the low-speed spring, seats the valve lightly. See that the high-speed spring above B is free and does not come in contact with the nut on the top of the auxiliary air-valve spring. Start the motor and turn nut A up or down until the motor idles properly.

For high speed adjustment, advance the spark and open the throttle. If the motor backfires through the carbureter, turn the high speed adjusting nut B up until backfiring ceases. If, with this adjustment and the motor running at low speed gallops, or the carbureter loads up, the mixture is too rich. The nut B should then be turned down until the trouble ceases. The spring above nut B should always have at least $\frac{1}{32}$ inch clearnace between it and the nut at the top when the motor is at rest.

2—No. Flowing oil is necessary and grease cups would not take care of the lubrication properly.

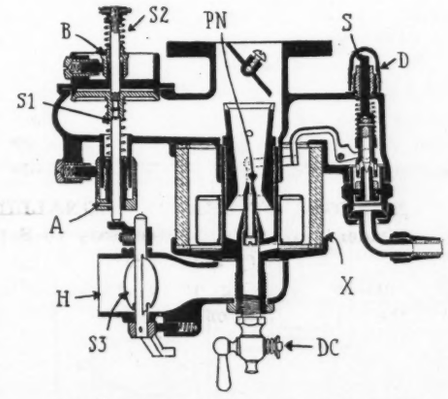


Fig. 3—Diagram to explain adjustment of Stromberg B-3 carbureter

3—The gear ratio was 3¾ to 1. When the car was in its prime it could be made to develop 60 miles per hour.

WIRING APLCO MOTOR GENERATOR

Controller and Switch in Combination With 20-Volt Battery

Plover, Ia.—Editor Motor Age—I have an A-7-5 Aplco motor generator to be used with a starting and lighting system. What battery and what style switch is required with this, and how is it wired?—L. E. Garlock.

A diagram is published in Fig. 2 which shows the arrangement of the complete outfit and should enable you to make a satisfactory installation of the device. With this starting and lighting outfit a 20-volt, 30-ampere-hour battery should be used, preferably one which is made up in twenty cells and, acting as a starter, delivers 20 volts and through the construction of the controller, which in itself is also the switch, transforms automatically into a 6-volt, 120-ampere-hour battery, and the generator replenishes the battery for the current taken for starting the engine. The controller and switch may be procured from the Apple Electric Co., Newark, N. J.

WHAT IS A REAL SPARE TIRE?

Reader Believes Every Spare Should First Be Given Test

Cambridge, Wis.—Editor Motor Age—Too often the tire carried at the rear of the car does not come up to the standard when necessity requires its use. That is when you need it most of all, is it not?

It is a good rule to run every spare at least one hundred miles before putting it on the carrier. In this way you have reasonable assurance that it is to be depended on in case of emergency.

The owner may have a new casing and tube fully inflated and carried as a spare, but in which the tube has been pinched in mounting and which trouble does not show up until he puts it on the car on the road, for a pinched tube will sometimes hold air until the weight of the car causes it to let go.

Then again a puncture may have been repaired and the cause of the puncture not removed from the casing. A few miles of travel and the tire that was apparently all right on the carrier goes down.

A spare that you are not positively sure of is not a real spare.—J. W. Hayden.

ADJUSTMENTS ON BUICK MODEL C37

Methods of Removing Clutch Housing, Gearset Gears, Universal, Etc.

Belmond, Ia.—Editor Motor Age—Explain the proper method of dissembling and assembling and making the adjustments on the following described parts of the Buick C37 car:

1—How is the clutch housing removed and the clutch taken out in order to reface the clutch?

2—How is the gearset removed from the housing gears replaced in gearset housing?

3—How is the universal joint removed?

4—What is the proper way to remove the rear axle housing and driving shaft housing complete together from the chassis? How are the axles removed from the housing, replaced and adjusted?

5—How is the drive shaft removed from the housing?

6—How are the rear-wheel roller bearings adjusted?—A Reader.

1—The clutch housing and gearset case are cast in one piece, and it is necessary

to remove the entire casting by unbolting it from the rear end of the motor crankcase.

2—The gears are removed from the gearset case by removing the cover and the rear end plate, the gears and shafts being drawn out with the end plate from the rear.

3—To remove the universal, it is necessary to disassemble the rear axle and pull the splined shaft out of the sleeve, after which the joint can be unbolted from the universal driver on the rear end of the gearset main shaft.

4—The rear-axle assembly, including the main housing and pinion tube, may be removed by disconnecting the spring seats and removing the caps of the driving yoke at the rear of the gearset. To remove the rear-axle shafts from the housing it is necessary to disassemble the main housing. Both differential and pinion-shaft bearings are adjustable by means of sleeves located in the housing at the inner ends of the shaft.

5—The drive shaft can be removed by disassembling the pinion tube and the propeller-shaft adjusting sleeve at the rear end of the tube.

6—There are no adjustments on the rear-wheel roller bearing.

REASON WHY SPARK PLUGS FOUL

Burning of Gas and Oil Liberates Free Carbon From Solution

Grand Rapids, Mich.—Editor Motor Age—What causes spark plugs to foul?

2—What is the valve timing of a Stutz and Hudson? What is the greatest speed of special Stutz racing machines?

3—Did Vail drive a stock Hudson in the Sheepshead Bay race, and what changes did he make?—W. C. Burkhardt.

1—Burning of the gasoline and lubricating oil in the cylinders by the explosion of the gases causes the carbon, which is in solution in both liquids, to free itself and adhere to the cylinder walls, spark plugs and pistons in the form of nearly pure carbon. A high-grade oil, with the proper gasoline mixture and tight piston rings which will keep surplus oil below the pistons where it belongs, will reduce spark plug fouling to the minimum. Of course, if a motor misses, surplus oil will collect in the plug, there being no fire to burn it out, and cause fouling.

2—The valve timing accords with conventional practice. The Stutz racers, which were campaigned last year, are capable of a speed of 112 miles per hour.

3—The design was stock. Such alterations as higher gearing, lighter motor parts and advanced timing, were incorporated to increase the speed.

TIGHTENING TIMKEN BEARINGS

Simple Adjustment Method in Brown-Lipe Gearset in Pratt

Malta, Ill.—Editor Motor Age—Please explain how to tighten the Timken roller bearings in a Brown-Lipe four-speed gearset used on 1915 Pratt car.

2—What size carbureter should a Continental six-cylinder motor of 3¾ by 5¼ use?

3—How is the thrust bearing of a Brown-Lipe multiple disc clutch lubricated?

4—About how much current does the Atwater Kent ignition system use when motor is running 1,000 r. p. m.?

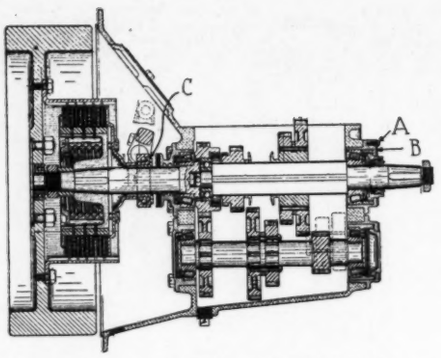


Fig. 4—Brown-Lipe gearset, showing method of adjusting Timken bearings

Inquiries Received and Communications Answered

Kingston Forbes	Flint, Mich.
S. J. Sibley	Memphis, Tenn.
Fred W. Leach	Mountain Grove, Mo.
L. E. Garlock	Plover, Ia.
J. W. Hayden	Cambridge, Wis.
A Reader	Belmont, Ia.
W. C. Burkhardt	Grand Rapids, Mich.
A Reader	Malta, Ill.
A Reader	Rock Rapids, Ia.
Ira Scott	Butte, Mont.

No communication not signed by the inquirer's full name and address will be answered in this department.

5—Does the voltage of a dry cell diminish with the amperage, or is it constant throughout the life of the cell?—A Reader.

1—Illustrated in Fig. 4 is a plan of the gearset in your car. By reference to this sketch you will find three points marked with A, B, and C. In order to adjust the Timken bearings the screw marked A should first be loosened, which will permit the removal of a small lock-plate. The adjuster plate marked B should then be turned to the left to tighten the bearings and after proper adjustment, the lock-plate should be replaced to its proper position. You will note that this one adjustment takes care of all bearings on the main shaft of the gearset. The same operation will adjust the countershaft bearings.

2—Let the carbureter maker specify the particular type which is most adaptable for this motor.

3—Regarding lubrication of the clutch throw-out bearing at the point marked in Fig. 4, this can easily be accomplished by the use of a squirt gun with a bent nozzle. After removing the cover on the clutch housing, the bearing should be lubricated as indicated with 600-W oil.

4—The Atwater Kent system takes about $\frac{1}{10}$ of 1 ampere when the motor is running at 1,000 revolutions per minute.

5—The voltage diminishes with the amperage.

HARRY FORD AND HENRY FORD

Wiring Diagram Published of Ward Leonard System on King

Rock Rapids, Ia.—Editor Motor Age—Is Harry W. Ford, president of the Saxon Motor Co., related to Henry Ford, founder of the Ford Motor Co.? If so, in what way?

2—How are the 1916 motor car license tags numbered? Do they start with 1? If not, from what number do they start? Why not use the lower numbers? Give reasons, if any.

3—Kindly publish a diagram of the Ward Leonard starting and lighting system as used on the King model 13.

4—Why do the 1916 motor car license plates vary in color? Some have white background, others green, etc.—A Reader.

1—Not that we have any knowledge of.

2—It depends entirely on the practice of the individual states. Most of them start with No. 1.

3—Wiring diagram published in Fig. 5.

4—If you refer to different states, the only answer is that it is the practice of each state to have a special color each year, with a few exceptions.

Peerless Gas Adjustment

Butte, Mont.—Editor Motor Age—Kindly advise how to adjust a 1911 Peerless 48 carbureter. Which is the high-speed adjustment, the small ball or the larger one? When I get above 30 miles per hour the engine chokes up.—Ira Scott.

Peerless did not build a 48 in 1911. The 1911 models are 31, 32 and 29 and the advertised horsepowers are 30, 50 and 20 respectively. In 1912 the model 36 had an advertised horsepower of 48 and possibly this is the model to which you refer. As the carbureters are different on these models we cannot give you an answer until you let us know just what model you have.

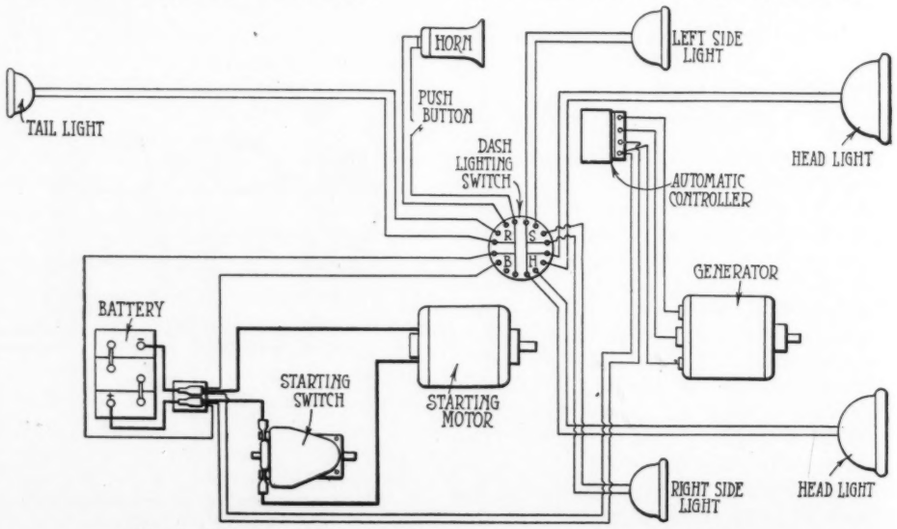


Fig. 5—Ward Leonard wiring diagram as applied to King model 13

The Motor Car Repair Shop

Fit the Garage Plan to the Site

MOST available buildings or building sites for garages in small towns are long and narrow. That is, they have a narrow street frontage with plenty of available depth. The unfortunate condition created is that it is difficult to find storage room for any number of cars without so cramping the floor space that it is difficult to move transient cars in and out.

Illustrated in Figs. 1, 2 and 3 are plans for a garage with side-door exit and two with front doors only. In designing the three types, the idea in mind was to provide for storage space with the least hindrance to cars driving in and out for minor repairs or for fuel replenishment.

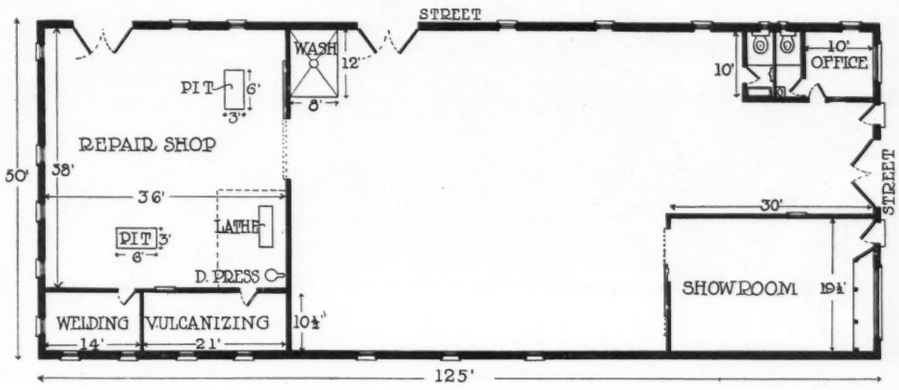


Fig. 1—Garage plan with side door exit available

By Wallace B. Blood

In Fig. 1, the plan calls for a corner site which permits exit into a side street. By placing a spacious show room on one side of the front and the offices on the other, the entrance comes in the middle and as a a result cars entering will be driven into the middle of the garage floor. This gives a good-sized space between the show room and the repair shop in the rear which may be used for storing cars. The stored cars are entirely out of the way in this design.

In the same plan there is a door entry into the repair shop in the rear which is in direct line with the front door so that a car routed for the repair shop may be driven into it without backing or twisting around. Another side street exit affords an easy means of getting the car out of the repair shop.

Fig. 3 illustrates a garage plan in which there is only a front entrance and exit available for driving cars in and out. The office and supply room, with possibly a show room, should be located in the center of the garages with entrance and exit doors on either side. A particular advantage of this plan is that car owners driving in and out are in touch with the office without getting out of their cars.

If needs be, cars can be stored in the center of the garage behind the store room, allowing enough room between the last car and the repair shop for transient cars to turn around and head for the exit.

Fig. 2 shows a garage in which there is no more than 25 feet frontage available. Of course, in such a narrow garage it is quite impossible to provide any amount of storage space and still leave any room for transient cars. Three or four cars may be lined up in the center of the garage and a turntable pit fitted in front of the repair shop in the rear. This will kill two birds with one stone. Cars may be run onto the pit for repairs and after the repairing is done turned around to head them for the street. If the garage is in a small town where very few cars come in in a day, vehicles may be lined up against the walls on either side and incoming cars taken care of through the center and turned around on the turntable pit or backed into the street.

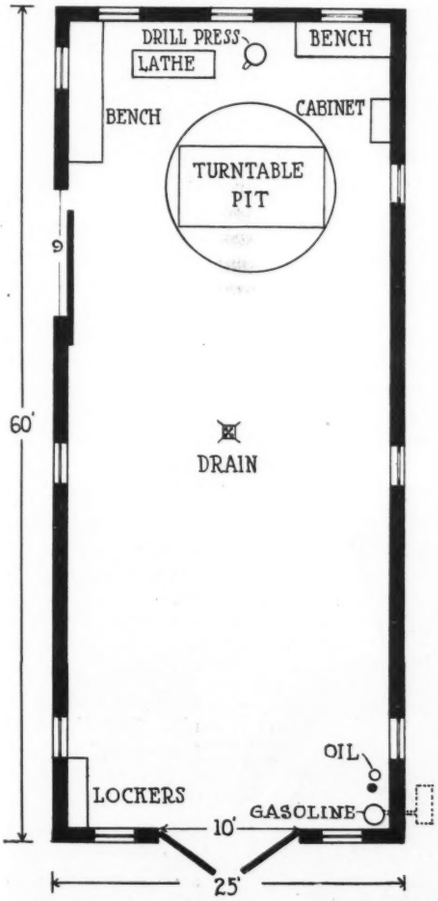


Fig. 2—Garage plan for very narrow available space

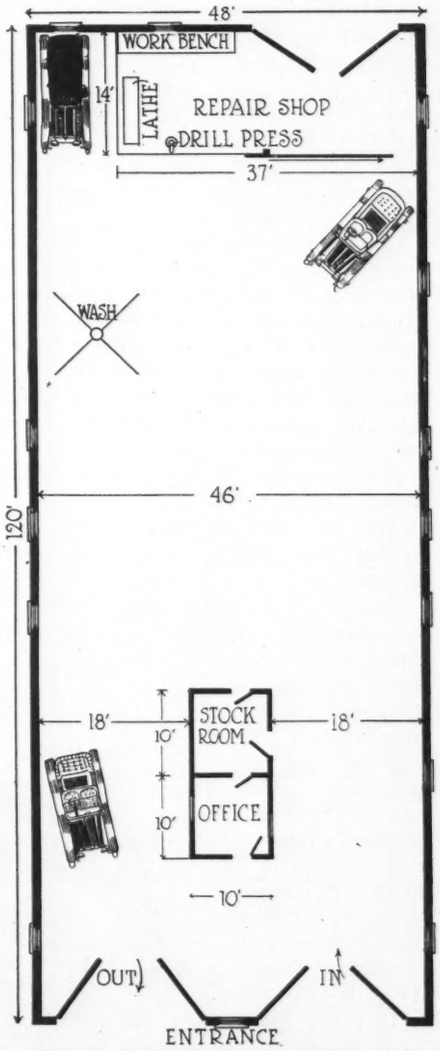
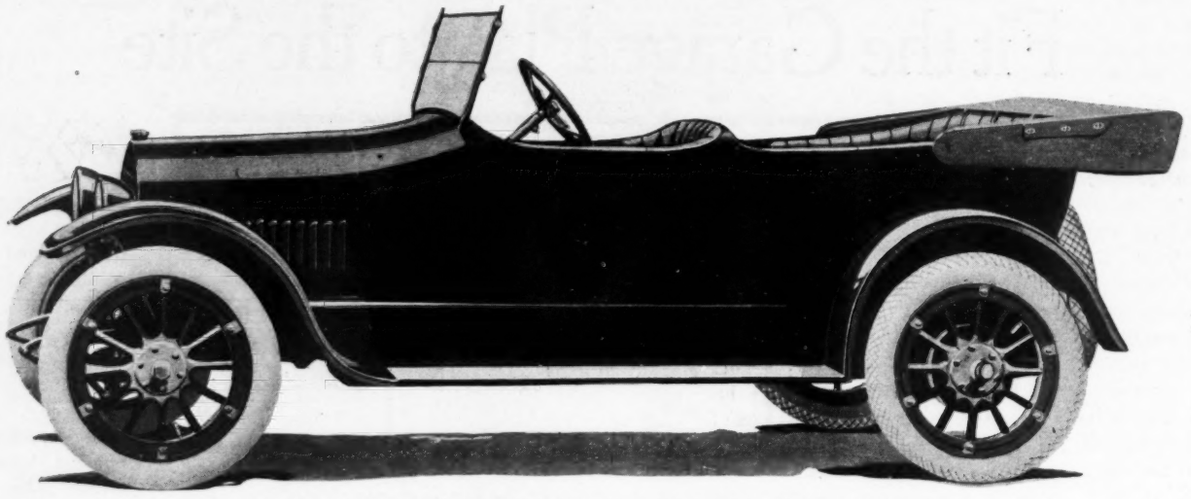


Fig. 3—With front entrance and exit and sufficient width this garage is an efficient type

New Jackson Eight with Ferro Motor

Supplied in Four Open-Body Styles



Seven-passenger body on chassis of Jackson eight with Ferro motor

A NEW eight with a 48-horsepower, valve-in-head, Ferro motor and supplied in four attractive open-body styles will lead the Jackson line for next year. Outside of the change in power plant, the car is characteristic and has the well-known full-elliptic springs. The wheelbase is 18 inches, and tires are 34 by 4, non-skid rear. The three present models, two eights and a four, will be continued without any change.

The price of the new model is in between that of the other two eights. It sells for $1,295, as a two or five-passenger. The four-passenger is $1,395, and the seven, $1,370. These figures are slightly higher than the five-passenger eight which is continued at $1,195, and considerably below the seven-passenger eight at $1,685. The four-cylinder model lists at $985.

The bodies for the new chassis are decidedly modern and are attractively painted, the color combination being light maroon with black running gear and fenders.

All have tilted windshields. Five- and seven-passenger cars have a double cowl and the body rim is rolled in. Divided front seats and a sloping deck characterize the four-passenger, which has wire wheels as standard equipment.

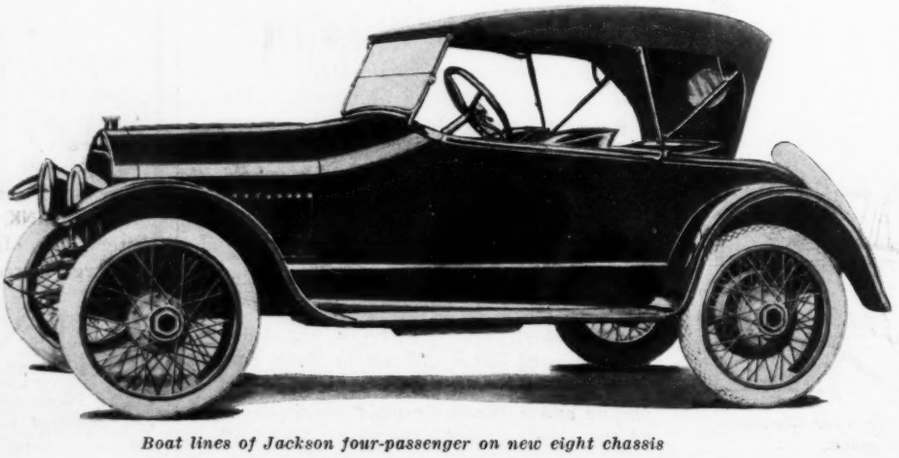
The chassis is built of standard parts and the design is mainly conventional. The motor is combined with a Borg & Beck plate clutch and a three-speed, Covert gearbox. The clutch is a departure in Jackson construction in that the other models have leather-faced cones.

The motor is 3 by 3½ inches and develops its maximum of 48 horsepower at 2,400 revolutions per minute. The N. A. C. C. rating is 29 horsepower, and the piston displacement is 198 cubic inches, which gives .246 horsepower per cubic inch of piston displacement.

Both blocks of cylinders and the upper half of the crankcase are cast in one piece, and the cylinder heads are detachable. Intake manifold and water outlet header are combined, the latter forming a jacket around the former; this not only gives a more simple construction, but also provides heat for the mixture. The manifold is arched, and the carbureter is suspended from the center. Condensation cannot settle in the manifold, but must run to one cylinder block or the other; thus loading is prevented. The generator is at the front of the V and the ignition distributer at the rear. The exhaust pipes are on the outside.

A feature of the design is that although the valve-in-head construction is used, the valves are completely inclosed, yet they may be adjusted or the rockers may be oiled without removing the covers. This is due to the peculiar valve construction. The rocker is a steel-pressing and has a cup at its center which fits over a ball-ended stud mounted in the head, which is adjustable from the outside, and by moving it in or out, the proper clearance between the rocker and the valve may be obtained. The ball joint is oiled by a wick which is placed in a hole drilled in the center of the stud.

Carbureter is a Zenith duplex, to which gas is delivered by a Stewart vacuum system. Starting and lighting are supplied by Auto-Lite units and ignition is by Remy distributer. The generator is driven by a 2-inch flat belt from a pulley on the crankshaft and adjustment is obtained by raising the hinged platform which carries the generator. A two-blade fan is mounted on the front end of the generator shaft, and cooling is by Thermo-syphon in conjunction with a vertical tubular radiator. The forked type of connecting rod is used. The wristpins are bronze bushed.



Boat lines of Jackson four-passenger on new eight chassis

Pistons are cast iron and have three Wasson rings. The pistons are slightly relieved on the wristpin sides. These wristpins are held in place by a set-screw and cotter pin. The clearance between piston and cylinder is .003 inch.

The camshaft carries an independent cam for each valve and is mounted on three bronze bearings. It is driven

by helical gear and roller valve-lifters are used. Valves have a mean diameter of 1⅜ inches with a total lift of .326 inch.

Lubrication is combined pressure and splash feed. The crankshaft and connecting rod bearings are pressure fed. The gear oil-pump, mounted at the front of the motor, pumps the oil through a regulator and thence through the hollow crankshaft to all the bearings. The suction line of the pump is on the right side of the motor and feeds the oil through a screen in the bottom of the pan directly to the pump. In case it is desired to wash out the pan this screen readily may be removed.

The pipe line on the left side of the front engine gear cover leading to the oil regulator is the main oil pressure line. In order to prevent excessive pressure in the system a relief valve is inter-connected with this line, which starts to open at a comparatively low pressure and throws the oil on the engine gears. This valve is placed on the top of the gear cover and in case the oil gauge does not register it may be found that dirt is interfering with its operation.

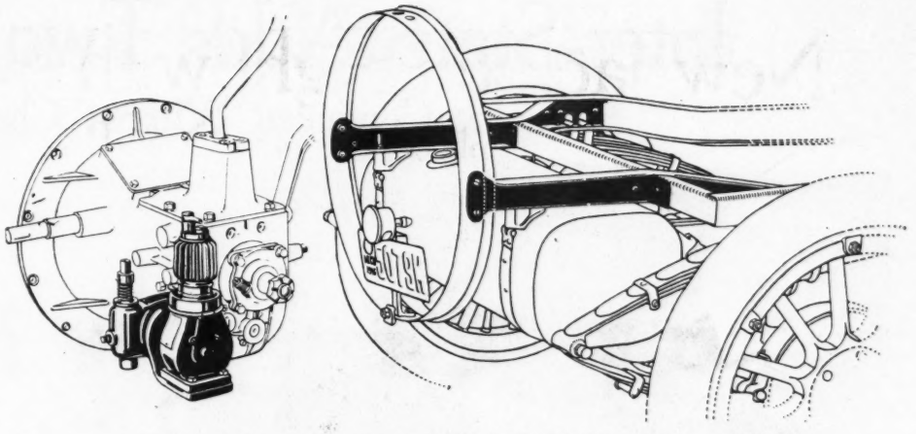
As already mentioned, the clutch is a Borg & Beck dry-plate and may be reached for inspection or adjustment through a handhole in the flywheel housing.

Hyatt roller-bearings are used throughout the gearbox. The shifting lever is a ball and socket type mounted in the gearcase cover. Carried on one side of the gearcase is a single-cylinder Stewart air pump which may be thrown in action by a lever in a pocket in the floorboards. This pocket also carries the air holes.

The drive shaft has two universals and both torque and driving strains are transmitted through the springs.

The rear axle is a floating design of Salisbury make with spiral bevel drive giving a 4¾ to 1 ratio. Brakes are internal and external 12 by 2 inches. Bearings are Hyatt, New Departure and Gurney.

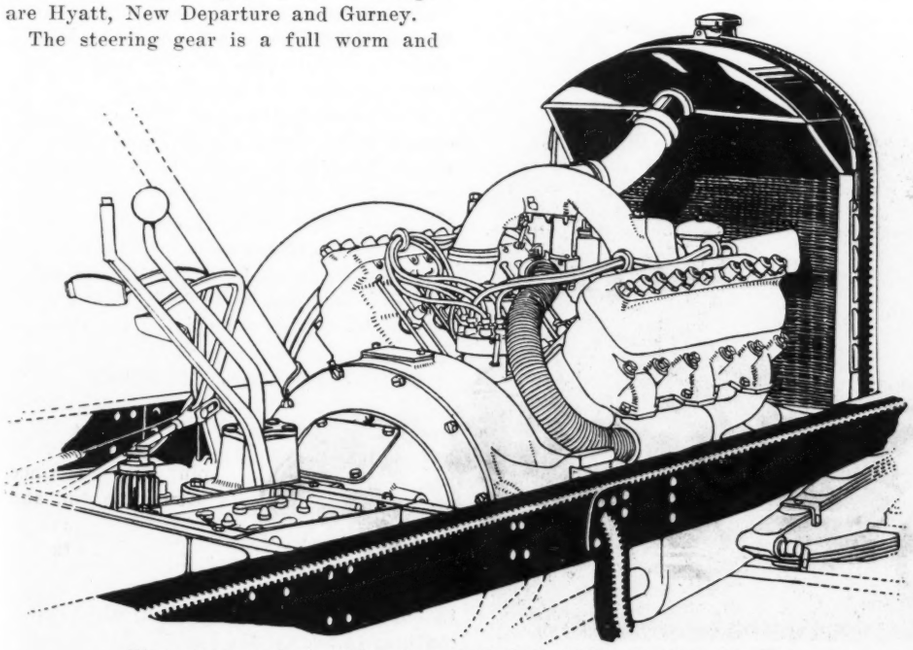
The steering gear is a full worm and gear type made by the Foster Gear Co.



Location of power tire pump and method of carrying extra tire on Jackson eight-cylinder car

A new support for the spare rim and gasoline tank has been devised. It consists of two horizontal channel members overhanging the rear cross member. The tank is suspended from these, and the rim carrier is bolted to their ends. They are solidly anchored in the frame, extending forward to form diagonal reinforcing, or gusset members, for the frame.

A new door lock has been designed, which is extremely easy to operate under all conditions and yet is simple in construction. It is operated by a button which is flush with the upholstery and consequently cannot catch the clothing of passengers getting in or out. An advantage is that pushing the button and opening the door is one movement, and it takes very little pressure to operate the button. The catch on the lock rotates instead of sliding, as is usually the case. It is pinned to a short rod and the position of these two members is such that they are just over dead center and the catch cannot be moved. When the button is pressed, these two members are thrown off of dead center and the catch opens readily. The door must be locked by a different action inasmuch as there is no give to the catch except when the button is pushed. Consequently the give has been provided by designing a spring keeper.



View of powerplant setting in new Jackson eight, showing shape of levers designed to give ease in driving

The four-cylinder car, known as model 34-A, is made as a five-passenger touring or two-passenger roadster. It has a unit power plant consisting of a 3½ by 5-inch L-head block motor, cone clutch and three-speed gearbox.

Schebler carbureter and Stewart vacuum system are used, ignition is supplied by a Connecticut distributer and starting and lighting are Auto-Lite units. A centrifugal pump is used for circulating the cooling water. The wheelbase is 112 inches and tires are 32 by 4 with the non-skids in the rear. Steering gear is a worm and gear and the rear axle is full floating.

The smallest eight is also made with a two- or five-passenger body and the largest eight with a seven-passenger body. The former has a 2⅞ by a 4½-inch motor and the latter 3½ by 4½-inch. The specifications are the same as for the four except that the largest eight has a 124-inch wheelbase and 34 by 4½ tires.

The stock color for the four is Brewster green with black-enameled hood and fenders. The smallest eight is dark green and the largest eight dark blue, both with black enameled hood and fenders.

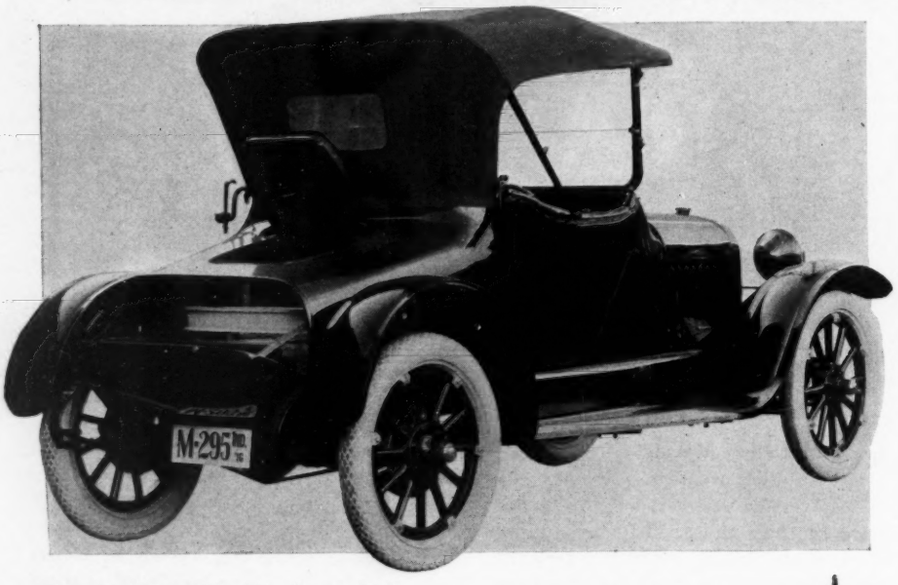
The equipment is complete, consisting of one-man top, Collins curtains, with curtain openers on the doors, rain-vision windshield, Stewart speedometer driven from the main drive shaft, etc. All three eights are equipped with a tire-pump and the four is designed so that a pump readily may be attached.

NEW KINK IN DELIVERY

Webster City, Ia., Sept. 1—The Big Store, a large mercantile establishment in Webster City, Ia., recently purchased an Overland model 83-B delivery car. Underneath the body of the car were placed gasoline and oil tanks, enabling the driver to deliver oil or gasoline direct from the tank.

Inter-State Adds Two Bodies

Chassis Continued Without Change



Inter-State roadster with door in deck

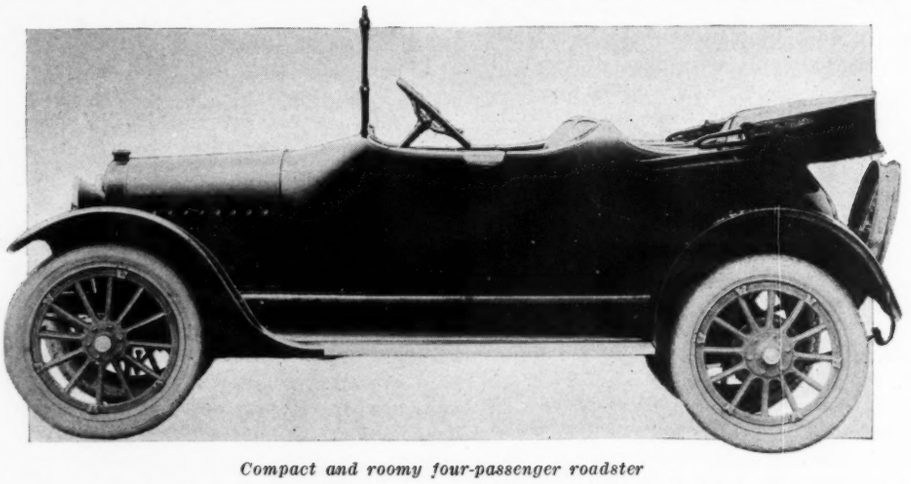
INTER-STATE chassis will be continued for another year without change, either in design or price. However, to meet the demand this season for two body styles somewhat different from the regular five-passenger and roadster models, the Inter-State Motor Co., is offering a divided front seat touring car and a four-passenger roadster at $895. A delivery car is also being offered for 1917, listing at $850.

The higher prices of these two pleasure car additions to the Inter-State line, over the continued five-passenger and roadster which sell for $850, is commensurate with the prices of materials and labor today and with the size of production under which these cars will be produced. They have been added to meet the demand of buyers who want individuality.

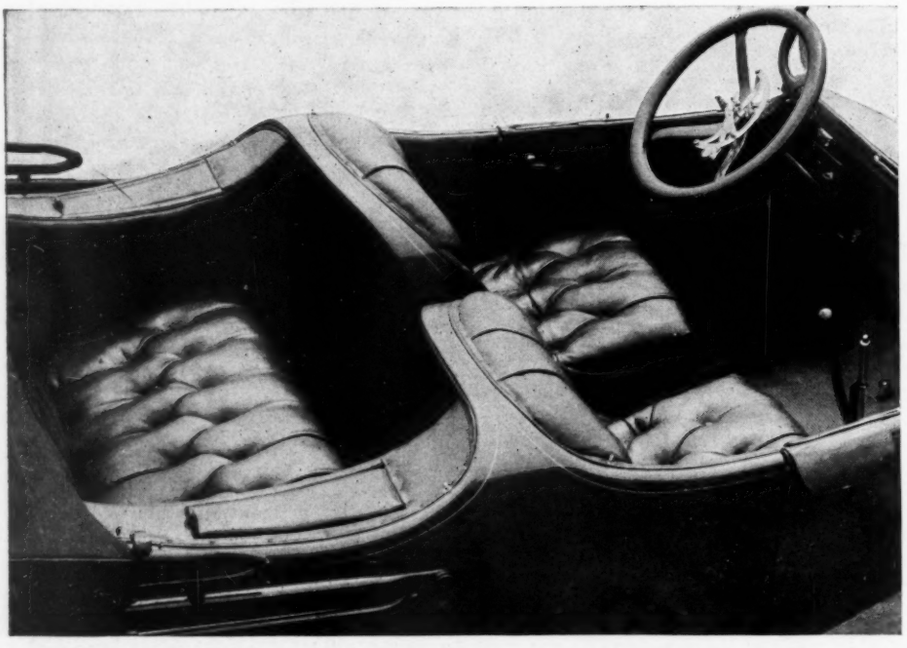
The new four-passenger roadster is thoroughly roomy both in size of seats and leg room in the front and rear compartments. Entrance is through the divided front seats. Built into the arms on each side of the rear seat are spacious compartments for small articles. Entrance to these compartments is gained through a flap on the top of each arm.

In the five-passenger divided-front-seat touring car, the driver's seat is adjustable, that is, it can be moved forward or backward to suit the height of the driver.

The divided-front-seat touring car has for its standard colors a dark-green body and cream-colored wheels, with the running gear finished in black. The four-passenger roadster is finished in a gun-metal gray body and battleship gray wheels, with gearset, three forward and a reverse, Remy starting, lighting and ignition and brown Spanish leather for upholstering.



Compact and roomy four-passenger roadster



Seating arrangement of Inter-State roadster showing compartments in rear-seat arms

Brief specifications of the continued chassis are: Four-cylinder, valve-in-head motor, 3½ by 5; cone clutch, selective gearset three forward and a reverse, Remy electrical system, floating rear axle, semi-elliptic front springs, 36 inches long by 1¾ inches wide; three-quarters elliptic rear, 46 inches long by 2 inches wide; Goodyear 33 by 4 tires, non-skid on the rear.

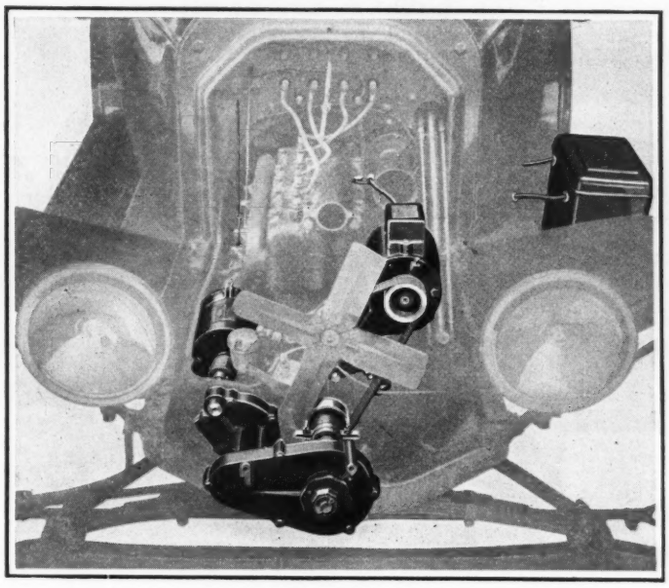
TO SELL HALF-TON TRUCK

New York, Sept. 1—W. C. Mack, formerly manufacturer of the Mack truck, has designed a half-ton truck, and the Metropolitan Motors, Inc., has been organized to manufacture it in New York City at $695, delivered. The business of the White Star Motor & Engineering Co., maker of 2, 3 and 5-ton trucks, has been taken over by the new concern, which will continue to market the heavier line as well as the new light model.

A-B-C Starter for Use on Fords

Applied Without Altering Motor

SEVERAL marked advantages are claimed for the two-unit, 6-volt starting and lighting system for Fords made by the A-B-C Starter Co., Detroit, and selling for $85, installed. It is the design of Alexander Churchwood, well-known starting and lighting expert, who is vice-president and engineer. Special importance is attached to the fact that the system does not interfere with the accessibility of the Ford motor and is itself accessible. The supporting brackets are so designed that they do not put an undue strain on any of the motor parts. Another important feature is that no changes in the Ford construction are made, the motor and all its accessories remain exactly as they are.



A-B-C starter as assembled on a Ford car

The generator is mounted at the left front of the motor on a bracket which is supported from the crankcase, longer crank-case bolts being used. It is driven by a broad, flat bolt from the regular crank shaft fan-driving pulley. The fan pulley itself acts as an idler and the spring keeps the belt taut. A Ward Leonard current regulator is mounted on the top of the machine.

Starting motor is placed on the right side forward of the carbureter and is carried on a cradle which is bolted to the crankcase flange on one side and which is supported on the other side by a lip which goes around the edge of the frame.

A double reduction is used, the first being through spur gears and thence through a roller chain which drives through a shaft which connects with the front of the crank shaft. This whole mechanism is carried in a rigid casting which is anchored by the front spring clips.

There are two innovations in the design of the starting apparatus, one is the use of a cushioning spring interposed between the ends of the armature shaft and the starter reducing gear, so that the inertia of the armature may be used to give the initial pull requisite to overcoming the high starting friction. The result is that the initial draw on the battery is much less than if the armature were solidly connected.

The second point of interest is the method of engaging and disengaging the starter clutch, which, by the way, occupies about the same position as the starting crank does in the ordinary car. The principle is somewhat similar to the Bendix drive. When the starter begins to rotate the driving member of this clutch slides forward and engages the crankshaft. This sliding motion is obtained by cutting a spiral thread on the outside of the sleeve and having meshed with it another sleeve or nut which is held from sliding by a loose-fitting collar. This sleeve is free to rotate, yet the collar produces sufficient friction so that when the starter begins to operate the inner sleeve is held back enough so that the outer one is screwed forward into engagement.

The device is disengaged automatically, the motor running away from the starter and thus drawing it out of engagement.

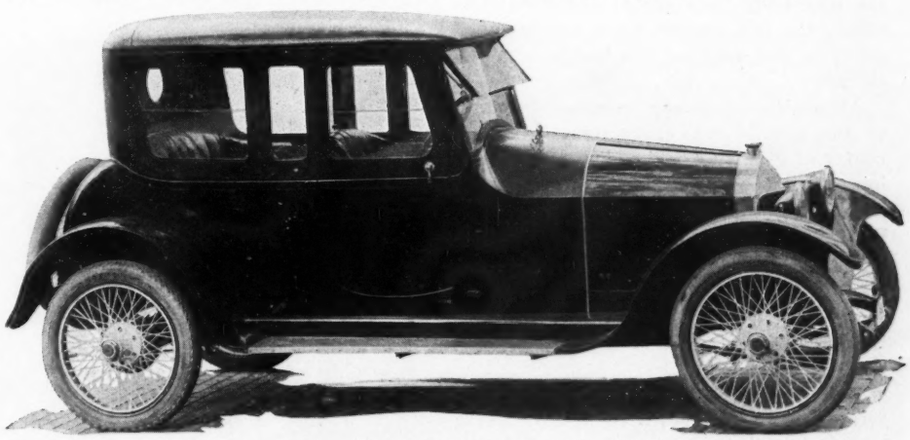
The installation is extremely simple; it usually does not require over three to five hours and is included in the price, as already noted. To attach the generator, three short bolts are removed from the crankcase flange and longer ones are substituted. The motor requires the removal and replacement of only two bolts and the gear housing is attached to the front spring clips after removing the radiator. Except for the wiring, this is all there is to the installation. A panel, on which is mounted the lighting with dimmer, is placed at the left on the dash and the starting motor is operated through a small pedal in the floor board.

Due to the fact that the initial drain on the battery is low, because of the spring drive, a 60-ampere-hour battery is deemed sufficient.

The complete equipment includes ammeter starting switch, lighting switch with dimmer attachments, and all necessary parts for installing the system.

CLUB ORGANIZED IN PERU

Lima, Peru, Aug. 7—Yesterday a number of men in Lima who own cars met for the purpose of organizing themselves into a club with the intention of combining their efforts to secure better motoring conditions in Peru. The great drawback to the business here, and the reason why there are not more enthusiasts, is the fact that the streets of Lima are narrow and rough and the surrounding country practically without roads. The club has, therefore, set road improvement as its first purpose, and will encourage road building.

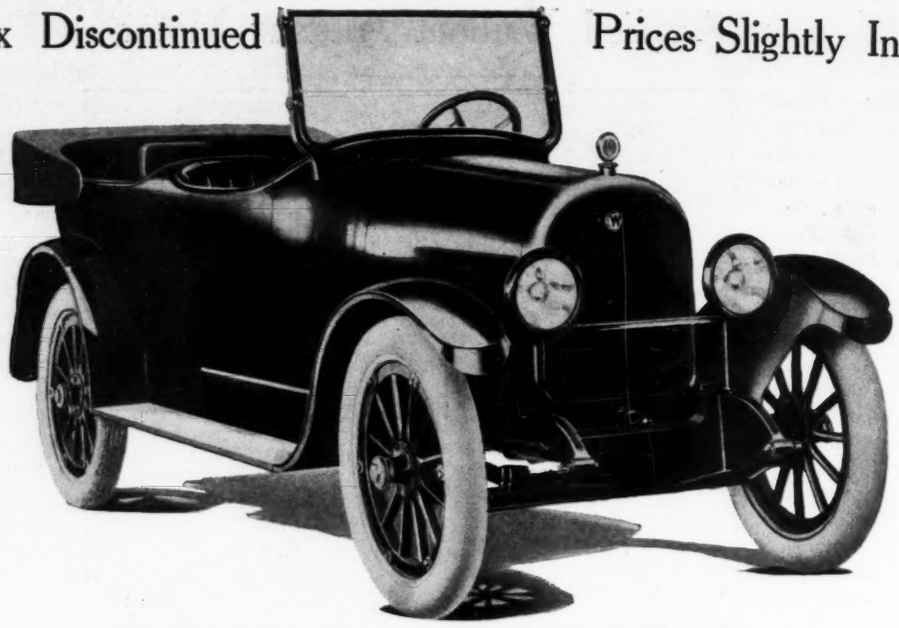


SCRIPPS-BOOTH EIGHT WITH WINTER TOP

A new fall model of the Scripps-Booth is the eight-cylinder car with its winter top. The top was designed as an integral part of the car although it may be easily detached. It fits closely to the body with flush sides, and windows are removable. The interior is finished in grey whipcord and a dome light is built into the top. Both the winter top and regular top are fitted to the eight-cylinder model for $1,350. The eight without the winter top sells for $175 less.

Westcotts Have New Streamline Bodies

Small Six Discontinued Prices Slightly Increased



Three-quarter front view of seven-passenger Westcott with bulging body and slanting windshield

NEW streamline bodies, minor mechanical changes, an increase in price in the big six, and a discontinuation of the small six, is the announcement of the Westcott Motor Car Co., Springfield, O., for its 1917 production.

The line embraces a three-passenger cabriolet at $1,890; a four-passenger touring roadster at $1,590; a five-passenger touring car at $1,590; a seven-passenger at $1,690; a five-passenger Springfield-type touring sedan at $2,090, and a seven-passenger Springfield-type touring sedan at $2,190. Last year's seven-passenger car sold at $1,595.

The Westcott clings to the general lines and appearance that have characterized it in the models of 1915 and 1916. While the new body lines are of the streamline effect, the full curved cowls and full bell curve in the rear of the bodies are continued.

All models are swung considerably closer to the ground than heretofore, giving a center of gravity 4 inches lower and, thus, increasing the riding qualities and stability of the car.

Windshields Are Sloping

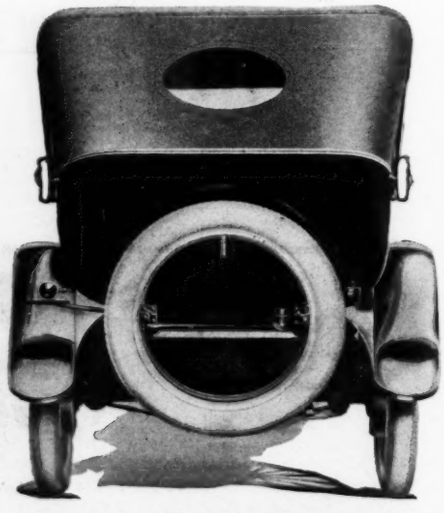
Sloping windshields have been adopted, the upper glass of which overlaps 1¼ inches and the sides of which carry rubber filler strips to prevent rain dripping through.

The aisle-way between the front seats is 2 inches wider than in 1916 models, being 9 inches across. The front and rear seats are also wider, the tonneau seat being 50 inches wide inside.

The new 125-inch wheelbase chassis is used to carry three-, four- and five-passenger bodies on 34 by 4 tires and all other models with 34 by 4½ equipment. Last year's equipment called for 34 by 4 only.

The motor is the same-sized Continental as was used in the big car last year with 3½-inch bore and 5¼-inch stroke, cylinders block-cast. There is nothing about the powerplant which is contrary to standard Continental design. A Brown-Lipe dry-plate disk clutch and gearset replace the make formerly used. As previously mentioned, the wheelbase has been reduced 1 inch to 125 inches. Otherwise the chassis follows the 1916 design in general principles of construction.

Briefly, the specifications are: 37 by 2 semi-elliptic front springs, 50 by 2½ cantilevers on the rear; Delco starting, lighting and ignition; Rayfield carbureter, cooling by centrifugal pump and fan with thermostatic regulation through a cellular radiator with removable shell Timken rear axle and bearings with worm-bevel gear drive; Willard storage battery and Stewart vacuum tank; gasoline tank on the rear with filler-cap conveniently located.



Rear view of Westcott, showing accessible location of gasoline-tank filler

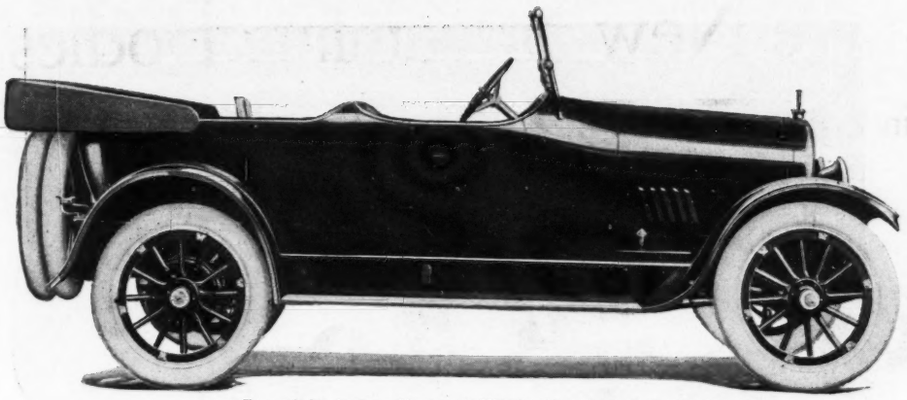
The practice is being continued of making the steering column adjustable up and down and the control pedals adjustable for length. The features allow adjustment for comfortable driving by a child 4 feet in height or a man weighing 350 pounds—quite an elasticity.

Rear Seat Unusual

The unusual features of the new touring roadster are particularly as regards the arrangement of the rear seat, the inside of which is 36 inches in width. A tonneau light is fitted as a convenience when reading road guides or in arranging robes and in addition an electric light is provided which illuminates the inside of the deck at the rear of the car. The same switch controls both lights and is within easy reach of rear-seat passengers.

Horsehair carpets are used for the floors and lower parts of the side-walls in the tonneau.

Westcott has always made it a point to equip its cars with every article of equipment of real use to a motorist. A partial list of these conveniences is: Pantasote one-man top with jiffy curtains incorporated, carbureter adjustment on steering column, mahogany instrument board with compartment for tools, gloves, etc., equipped with a Yale lock operated by the same key which turns on the Delco switch; ammeter, shroud lamp, oil pressure gauge, Warner speedometer driven from propeller shaft, extra demountable rim with tire



Graceful stream lines of Westcott seven-passenger

carrier, Warner electric clock, Klaxon horn, flush tonneau lamps, Boyce Moto-Meter, engine-driven tire pump, robe rails, foot tail, license brackets, gasoline gauge, etc.

TO DOUBLE OUTPUT

Syracuse, N. Y., Sept. 1—As a start to doubling its output the Brown-Lipe Gear Co. has purchased the Fayette street plant of the John Deere Plow Co., this city. The new purchase gives the company an entire block back of its present plant on Fayette street.

TO SEEK JUVENILE TRADE

Indianapolis, Ind., Sept. 1—Motor cars are to be manufactured exclusively for the juvenile drivers by the American Motor Vehicle Co, of LaFayette, Ind. The company was organized a month ago with a capital of $25,000 to market a car which will carry two passengers comfortably. Not only are young Americans to be made happy by this model, but far China is to know it, for the company plans to see how it competes with the jinrickisha, the man-drawn cart, now used for transportation there. The car will have a 40-inch tread and a 70-inch wheelbase.

Later the company will begin the production of motor chairs, an order for such having been received from the concern which has the concessions on Chicago's new municipal pier and the board walk at Palm Beach.

The officers are: President, Jacob Weisenthal, Lafayette; vice-president, Louis Marx, Chicago; secretary, William M. Crockett, Lafayette.

TEXAS LEADS IN GOOD ROADS

San Antonio, Tex., Sept. 1—That Texas now leads all other states in the number of miles of good roads is the statement made by Secretary D. E. Colp of the Texas Good Roads Congress at the state good roads convention which held a 3-days' session here last week. It was a joint meeting of the Texas Good Roads Congress, the Texas Good Roads Association, the Southern National Highway Association, the Meridian Road Association and the Puget Sound and Gulf Highway Association.

Perhaps the most significant action of the convention was its indorsement of the Tillotson highway commission bill, which was introduced at the last session of the state legislature, but failed of final passage because of the lack of time to consider it. This measure provides a state highway commission of three members, to sion to appoint a state highway engineer at a salary of $4,000 per annum. The funds for the support of the department would be obtained by a state registration tax on motor vehicles, one-third of the money thus derived to be returned to the counties. It was estimated that based on the present number of motor vehicles in Texas an annual revenue of about $500,000 would be obtained from that source of revenue alone.

It was stated by Engineer E. A. Kingsley, in the course of his address on the treatment of gravel and macadam roads, that there are 20,000 miles of well-built macadam and gravel roads in Texas, which were constructed at a cost of $80,000,000. The convention indorsed the projects of constructing several trunk highways through this state.

NO BONDS TO ENTER CANADA

Washington, D. C., Sept. 2 — Motoring reciprocity now extends the entire length of the border between the United States and Canada as the result of the joint labors of the American Automobile Association and the Canadian Automobile Federation.

It is now possible for American owners to enter Canada and Canadian owners to come into the United States without the giving of a bond for 30 days, which is a period greater than that granted by some states in motoring reciprocity with other states. John A. Wilson, former president of the American Automobile Association, presented the case to Secretary of the Treasury William G. McAdoo and particularly dwelt upon the point that the number of Americans who would cross into Canada would be greatly in excess of the number of Canadians who visited on this side of the line.

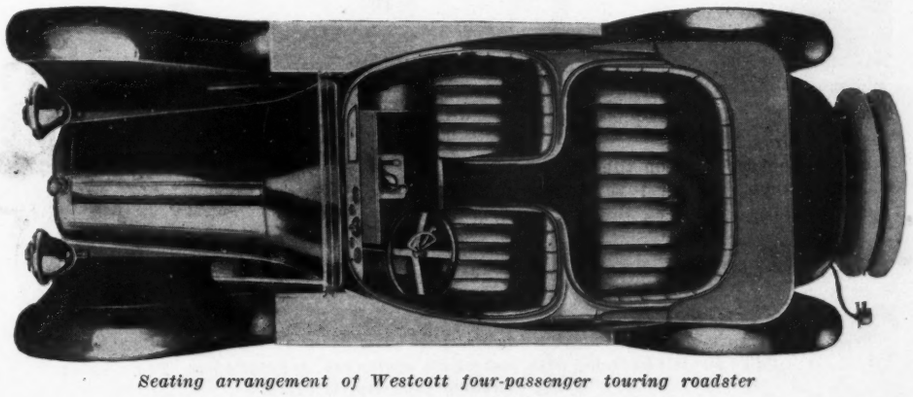
While there may be some delay in effecting the reciprocal arrangement at some of the minor ports of entry, motorists are advised to call for the sending of official confirmatory telegrams in cases where the authorities may not realize the full import of the agreement in reference to border-wide international motor car reciprocity agreements.

WANT RECIPROCITY ACT REPEALED

Bridgeton, N. J., Sept. 1—Farmers of South Jersey are declaring in favor of a repeal of the reciprocity act which allows thousands of motorists from outside the state to use the roads of South Jersey and wear them out without paying a cent toward their repair. During the summer there are hundreds of thousands of cars from all the surrounding states, coming from as far as California, that cross and recross New Jersey on their way to and from seashore points. These cars generally run at a greater average speed than local cars and it is believed that more than half the expense of the roads is due to outsiders who never contribute a penny. There are prospects of a fight in the next legislature over the matter of extending this privilege to outside motorists who tour through New Jersey.

NEW K. C. BUICK SALES PLAN

Kansas City, Mo., Sept. 2—A recent change in the selling methods of the Buick company in this territory separates the retail and wholesale lines of the business. The retail sales will be handled by the Hiatt-Buick Co., at 1715 McGee street. Le Roy Simons will be sales manager, and J. B. Durkee will be traveling salesman in Jackson County.



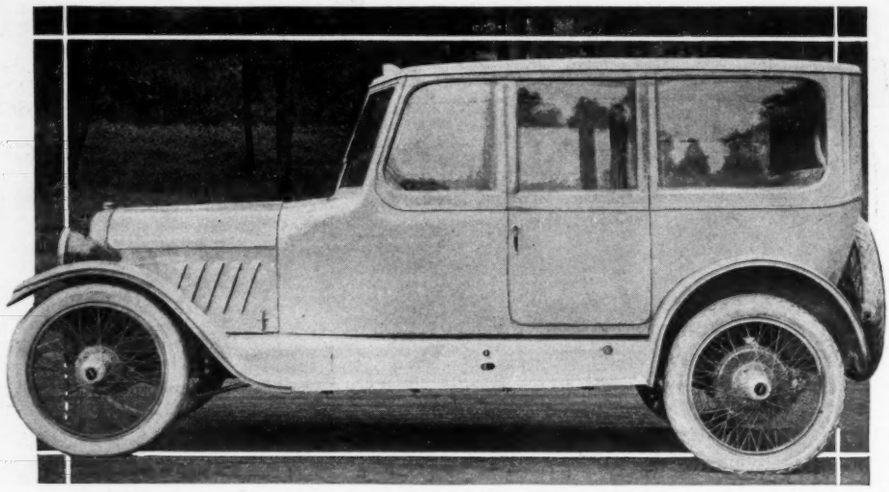
Seating arrangement of Westcott four-passenger touring roadster

Paige Town Car, Coupe, Sedans and Limousine

DISTINCTIVENESS and individuality, with an eye toward custom-made appearance guided the designers of the new Paige enclosed cars, which are just ready. The line includes a touring sedan built on the seven-passenger six-46 chassis, a coupe, town car and limousine on the same chassis; and also a sedan on the six-38 chassis.

The touring sedan on the six-46 is probably the most attractive of the line as far as outside appearance goes. One feature of the design, which tends toward individuality, is the pointed windshield, the windows of which are sliding. It is a two-door car, the front seats being divided. There is a dome light and reading lamps to illuminate the rear seats.

Among the novel features in the car's equipment is a light box placed on the top of the front of the car, directly above the windshield, which flashes in electric lights the initials or name of the owner, who can thus easily identify his car from a distance at night.



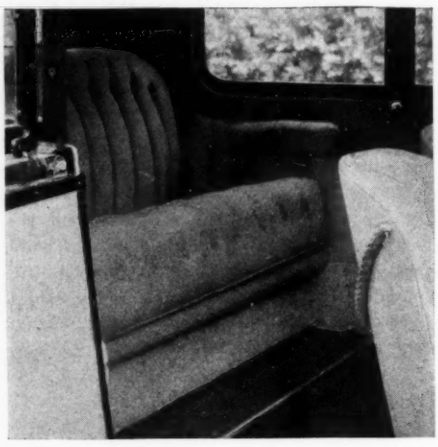
Paige convertible sedan with slanting windshield. The price is $2,300 on the six-46 seven-passenger chassis

RIVAL DEALERS COMBINE ON CAR

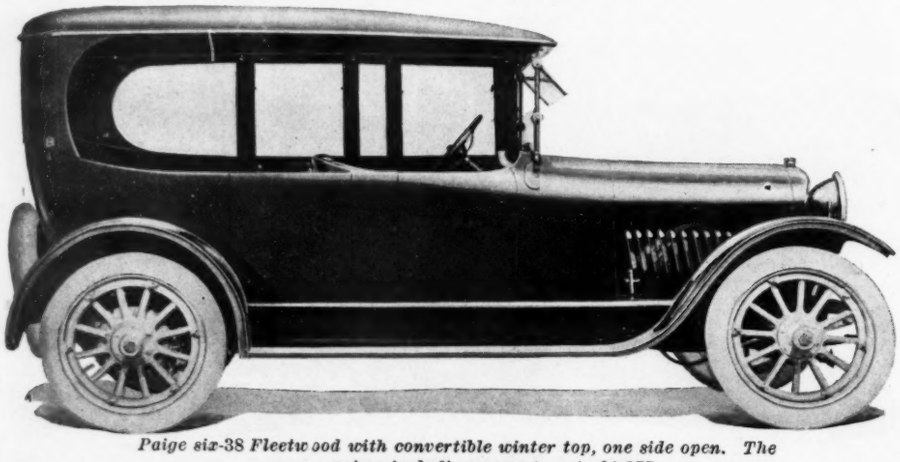
Cleveland, O., Sept. 1—The Jordan car, manufactured in this city, has secured a Boston agent which is rather unusual in that those back of the company handle other makes of cars. These include: J. H. Macalman, Stearns dealer and president of the dealers' association in Boston; J. W. McGuire, Pierce-Arrow agent who is treasurer of the association; and J. H. Johnson, Buick, who is a director. Manager Hinchliffe, of the Winton agency in Boston has resigned to take the management of the Jordan agency. In Boston the new agency is spoken of as the Officers' agency.

STANDARDIZES REPAIR RATE

Boston, Mass., Sept. 1 — Following a meeting of the board of directors of the Boston Automobile Dealers' Association this week a uniform rate of 85 cents an hour for repair work will be charged in practically all the service stations of the members, beginning today. Some months ago when the question of increased rates came up the directors did not care to place the association on record in the matter. At that time the Henshaw Motor Co. raised its price to 85 cents, and other dealers later followed suit. So it was left to the individual judgment of the members. President MacAlman said that wages were going up so much and good men were getting so scarce that he thought $1 an hour would have to come eventually, and he was willing to quote such a price. Now, however, so many of the dealers have gone to 85 cents an hour that the association feels it is possible to make the suggestion that such a rate be made uniform.



Rear compartment of Paige six-38 sedan showing wide door, and deep upholstering



Paige six-38 Fleetwood with convertible winter top, one side open. The price, including cape top, is $1,275

TO SET REPAIR PRICES

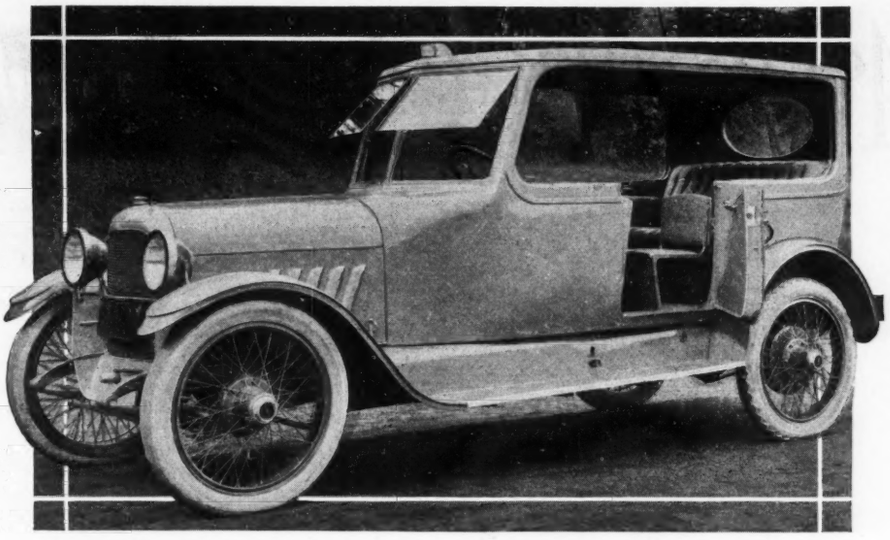
Chicago, Sept. 5—The American Association of Garage Owners, whose national headquarters are in Chicago, has inaugurated a campaign against extortionate charges for tourists and is about to establish maximum prices for repairs and storage to govern all garages holding membership in the association. The new schedule will apply to garages from Maine to California and from the Canadian border to the Gulf and the Mexican line. Violation of the schedule is to be reported by the secretaries of motor clubs and the violators disciplined.

The matter is now in the hands of the national advisory board for approval and the prices are expected to become effective soon.

BRINKER SETS RECORDS

Denver, Col., Sept. 3—Two records were set when Harold Brinker today finished the 119 miles from Denver to Pueblo in 2:15. Besides being the fastest time for the Denver-Pueblo road, it establishes the time of 45 minutes for the 44-mile stretch from Colorado Springs to Pueblo. The start was made just at daylight, and the time was taken by the motor clubs of Denver, Colorado Springs and Pueblo. The road was patroled by twenty-one men from the Cadillac Motor Co., the Marksheffel Motor Co., and the Pueblo Automobile Co., of the three cities, respectively.

Brinker made the 74.7 miles to Colorado Springs in 1:30 after losing more than 15 minutes with a blowout. This is 8 minutes slower than the new Denver-Colorado



Paige six-46 convertible sedan showing car opened for summer driving. One of the auxiliary seats is illustrated

Springs record of 1:22 made 12 days ago by Ralph Mulford in a Hudson Super Six, and Brinker will make another try at this stretch soon. He drove about 60 miles of the course yesterday morning, but lost a wheel and had to turn back after setting the mark of 54 minutes for the 52 miles to Palmer Lake. He reached Palmer Lake in 53 minutes today.

SECOND ANNUAL TOUR SLATED

New York City, Sept. 2—The second annual Owen Magnetic tour will start from this city September 9 and will continue 4 days through the Berkshires and the White Mountains. A dozen or fifteen cars provided by the company will carry more than fifty invited guests. The route will include Pittsfield over the Mohawk Trail to Greenfield, first night; thence along the Connecticut Valley to Hanover, N. H., for lunch and to the Profile House, White Mountains, for the night. The third day will be to Boston and the fourth, home.

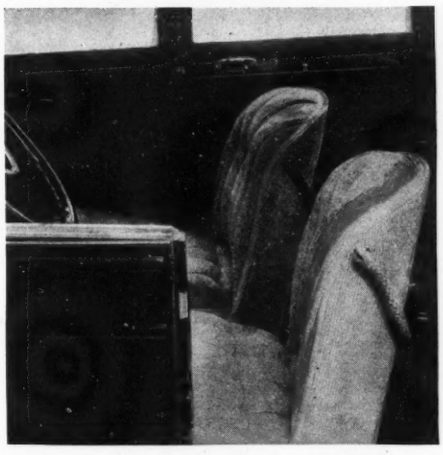
TO MAKE MOTOR ENGINE

Indianapolis, Ind., Sept. 5—The Smelser Automobile Engine Co., of this city, was incorporated last Friday with a capital of $10,000. The officers are James M. Smelser, president; O. L. Brown, treasurer; and F. M. Block, secretary.

The company asserts that its engine will economize in gasoline consumption; require no starting device of any description as the engine is on compression wherever it stops; run forward or backward with equal efficiency; and cool more easily than engines of other types. The flywheel is to be the only moving part of the engine visible and thus eliminate oil accumulations.

HOOSIERS START CAMPAIGN

Indianapolis, Ind., Sept. 5—The Hoosier State Automobile Association with headquarters in this city, has started an advertising campaign to raise funds to fight for a state highway department. Advertisements just published in newspapers direct attention to the enormous waste in public road-building funds and appeal to Hoosiers



Arrangement of staggered seats with aisle between in the Paige six-38 sedan

for contributions to be used in boosting the good roads movement.

Indiana is one of the four states not having a good roads department. The sum of $18,000,000 a year is spent in road construction by 4,500 road officials. The fifty-six clubs of the Hoosier State Automobile Association are backing the publicity campaign. The Indiana Sand and Gravel Producers' Association has recently gone on record as favoring a state highway department.

PERMANENT ROAD IN DESERT

Detroit, Mich., Sept. 5—The Willys-Overland Automobile Co., has agreed to an appropriation of $50,000 to assist the state of Nevada in building a permanent road on the Lincoln highway route through the Carson sink of the Nevada desert. This stretch of mud flats has been the biggest stumbling block for transcontinental tourists on the highway.

The appropriation is to match a similar sum put up by the state of Nevada for this particular job. This, with another bad spot in Utah which is to receive attention in the near future, are the only treacherous stretches which remain in the ocean-to-ocean highway.

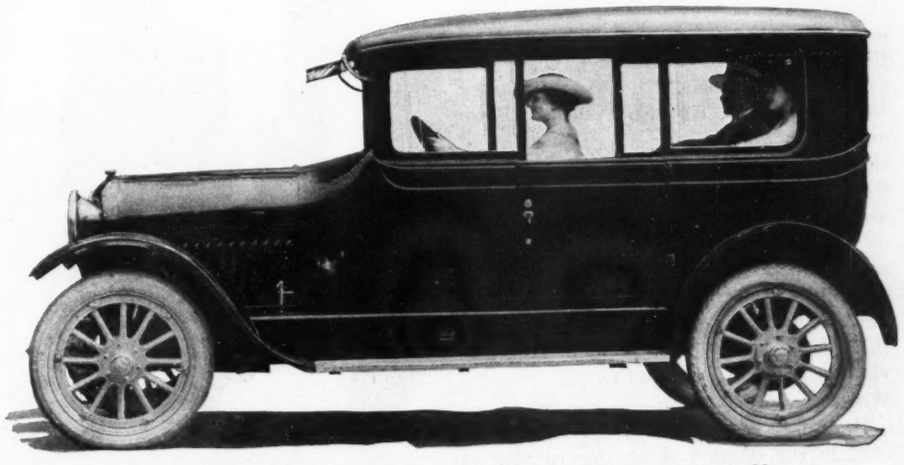
The road through the mud flats will bear the name of the Willys-Overland memorial section and will be appropriately marked.

HIGHWAY 75 PER CENT GOOD

San Francisco, Cal., Sept. 5—At least 75 per cent of the entire 3,331 miles of Lincoln highway from coast to coast is in good condition, 15 per cent of the road is in fair shape and but 10 per cent can be called bad, according to H. C. Osterman, field secretary of the Lincoln Highway Association, who has just completed the transcontinental drive on a tour of inspection.

More road working is being done along the way this year than had even been anticipated. It is estimated that construction under way between New York and Salt Lake City will total more than $5,000,000.

Improvements are most badly needed in Utah and Nevada where the long mileage and spare population make road building difficult.



Paige six-38 sedan for five passengers. All side windows are removable for warm weather driving

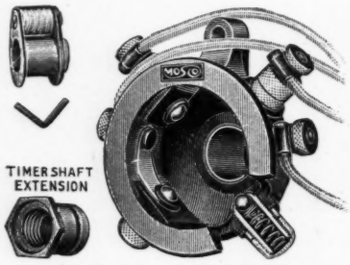
The Accessory Corner

Mosco Motor Accessories

IN THE Bemus ball-contact timer for use on Ford cars, one of the many accessories in the line of the Motor Specialties Co., Waltham, Mass., contact is made by a hardened tool-steel brush engaging a steel ball with short, glancing impacts, both the brush and the balls turning each time so that fresh contact surfaces are continually engaged. Mounting is direct on the time shaft by means of an extension piece. The mounting brings each of the balls equidistant from the brush, which, of course, tends toward perfect timing. The price is $2.50. Another product is the Mosco wheel puller. The No. 2 puller is made for Fords only. The device, as illustrated, sells for $1. Other wheel pullers working on the same principle for Overlands, Saxons, Buicks, Maxwells and Chevrolets sell for $1.25 and $1.50. The Mosco valve grinder is a hand-operated machine which is designed to impart an oscillating rotation to the valve while making a complete circle either way. Reference to the illustration shows the rounded casing of the grinder, which, when in use, is held by the left hand of the operator. Pressure is applied with this hand. The handle at the side is attached to a chain coiled onto a pulley inside the casing and adapted to rotate the grinder tool. The pulley is fitted with a spring wound clockwise so as to reel back any length of chain which has been unreeled on the forward stroke. This creates an automatic reciprocating feature. The operator pulls the handle for the forward stroke and the spring pulls the tool back for the return stroke the same distance in the opposite direction. The price is $1.50.

Mosco universal valve grinder

Wheel puller for use on Fords



Roller-contact Ford timer

Motor Car Lighting Switches

The specialty department of the Cutler-Hammer Mfg. Co., Milwaukee, Wis., has just published for distribution a new edition of its motor car lighting switch booklet. The text states that there are more than a million C-H switches in use on Packards, Overlands, Studebakers, Buicks, Detroit electrics, Haynes, Pullmans, Fords and many other cars. The first page of the booklet shows several assemblies of C-H switches installed on some of the above cars. The phantom view illustrated on these pages shows clearly the three-piece construction and operation of the switch. The latter part of the booklet is devoted to wiring diagrams which show the methods of wiring for single lamps and various lighting combinations.

Whirling Spark Plug

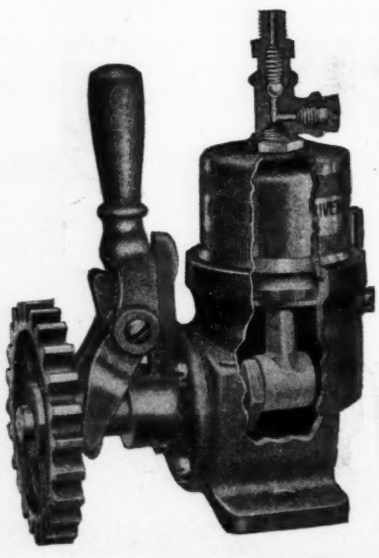
Dozens of hot, whirling sparks are created in the Randall rotary power plug at the moment of explosion. More power and economy of gas is claimed. The plug consists of two principal parts—a pair of novel spark terminals and a condenser connected, and operating with them. A removable spark chamber, having a conical tubular and knife-edged opening at the spark ends, forms the one terminal. Centrally located with the opening and supported by the usual porcelain, is a cone-shaped projection forming the other terminal. Surrounding the external portion of the porcelain is a steel case containing the condenser. The action of the condenser, considered with the terminals, transforms the spark received from the distributor into a spray of spark. The Randall Rotary Power Plug Co., Melwood Ave., Pittsburgh, is the maker. The net price is $2.

Wedgeless Wheel Clips

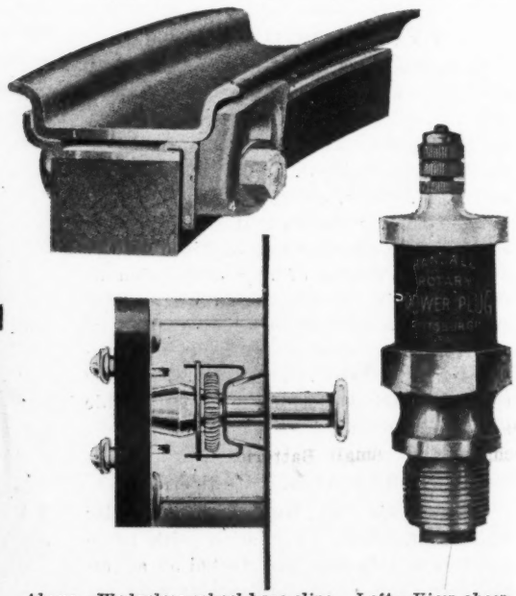
Clips which do not hold the rim on by wedging it, and for that reason, so it is claimed, give even pressure against the rim, eliminating distortion, are products of the McKay Co., Cleveland, O. By releasing the nut the clip is permitted to drop down, as there is a slot through the clip instead of a round hole. When tightened in place the nut fits within a depression which locks the clip in place. There is a plate below the clip which prevents the clip from sinking into the wood felloe. This plate helps to support the rim and guides the clip in its rim-releasing movement. The clip can be locked in an inoperative position by tightening the nut after the rim has been released.

Crane Power Tire Pump

In the Crane single-cylinder power tire pump a special patented alloy packing ring is used instead of the piston rings usually employed in power tire pumps, the manu-



Crane power tire pump with alloy packing ring designed to prevent any leakage of oil into tire tube



Above—Wedgeless wheel base clips. Left—View showing construction of C-H switch. Right—Whirling spray spark plug

facturer stating that this ring is so arranged between the piston and the cylinder walls that leakage cannot occur and oil is prevented from getting into the compression chamber, and hence cannot reach the inner tube. It is claimed the efficiency of this construction is 97 per cent. Pumps can be supplied for any make of car and the work of installing may be done by the car owner, no drilling of holes or machine work being necessary as the brackets are designed for attachment to bolts or studs already on the engine. The question of drive connection is solved by the use of split gears designed to fit the car on which the pump is to be mounted. With hose and pressure gauge, the pump sells for $8.—Bay State Pump Co., 275 Congress Street, Boston, Mass.

Light-Weight Welding Outfit

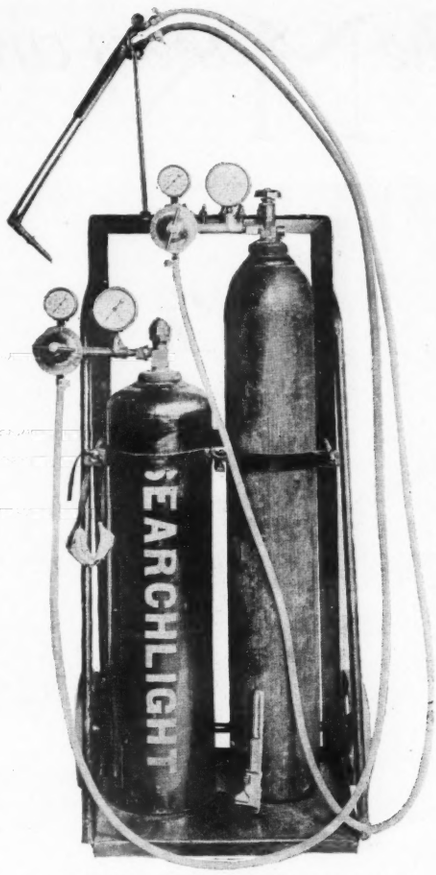
A welding outfit weighing 28½ pounds less oxygen and gas tanks, with attachments for every kind of acetylene welding may be had for $55. The searchlight equipment includes a welding torch 20 inches long with seven interchangeable tips, for various thicknesses of material, and necessary hose connections; an acetylene 3½-inch regulator with 300-pound high-pressure and 50-pound low-pressure gauges and necessary cylinder and hose connections; oxygen 3½-inch nickel-plated regulator with 3,000-pound high-pressure and 150-pound low-pressure gauges and necessary cylinder and hose connections; two 10-inch lengths of high-pressure 3-ply black hose and clamps, one for oxygen and one for acetylene; a universal wrench, pair of welding goggles, instruction book and a basswood carrying case. The Searchlight Co., 415 Karpen Bldg., Chicago, markets the equipment.

Taps Designed for Long Wear

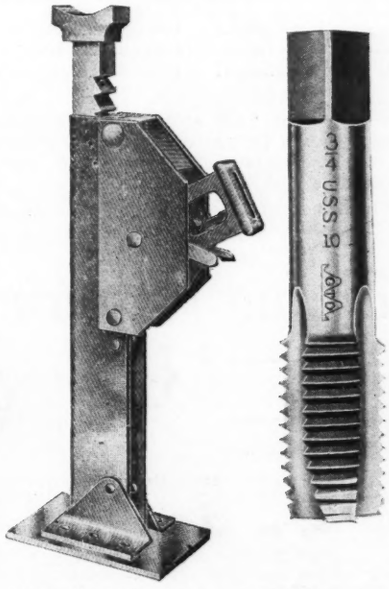
A booklet describing the construction of the gun tap and telling of its method of construction, has recently been issued by the maker, The Greenfield Tap and Die Corp., Greenfield, Mass. The gun tap is designed to wear out before it breaks. It is made with two or three flutes according to the size and the flutes are formed spiral with the axis of the tap. The cutting edges are thus ground at an angle to the axis of the tap, causing the tap to cut with a shearing motion, creating the least amount of resistance to the thrust. The angle deflects the chips so that they curl out and ahead of the tap and do not collect and break up in the flutes. A decided hook to the cutting edges causes the tap to work very freely and results in clean sharp threads. Taps are carried in stock for all standard machine-screw and tap-drill sizes.

Recharger for Small Batteries

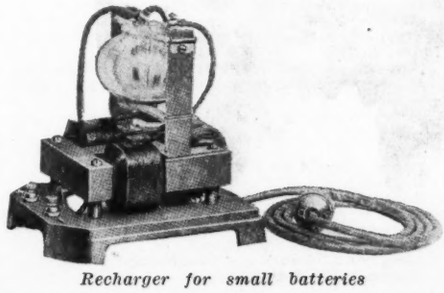
Supplementary charging of batteries in gasoline cars, which have become run down to a point where the generator will not pick them up again, or discharged altogether, may now be done with the use of a simple and compact mercury arc rectifier. The rectifier will deliver about 5 amperes at a maximum of 15 volts when connected to an ordinary lamp socket. It is designed for charging one three-cell, one six-cell, or two three-cell batteries, or it can be connected to a single battery cell and will charge it at the rate of approximately 6 amperes when connected to a 110-volt, alternating-current supply. The rectifier is made for 133-, 60-, 50-, 30-, or 25-cycle, 110-volt alternating currents. The rectifier consists of a metal base on which are mounted the necessary reactance coils and rectifier tube in a suitable holder. The whole device is enclosed in a sheet-metal cover. An attaching plug is supplied which may be screwed into any light socket. There are also two binding plugs distinctly marked + and — from which wires are run to the battery or batteries to be charged. Made by General Electric Co.



Searchlight welding outfit set up ready for use



Left—Lane steel jack. Right—Tap designed for indestructibility



Recharger for small batteries

Handle-Controlled Jack

The Lane handle-controlled motor car jack is designed to keep the operator free from dirt or soil of any kind. The jack is first placed on the 36-inch folding handle to which it becomes firmly attached, pushed under the car, operated entirely from the outer end of the handle and pulled out again after using, all without need of touching the jack itself. The long handle and short stroke exerts a powerful leverage, requiring little muscular effort to operate the jack. To raise the car, the handle is pulled back in its socket, a spring catch holding it in either position, and this catch must be released to remove the handle from the jack. Prices range from $3 to $4.25 according to the size. Lane Bros. Co., Poughkeepsie, N. Y., is the manufacturer.

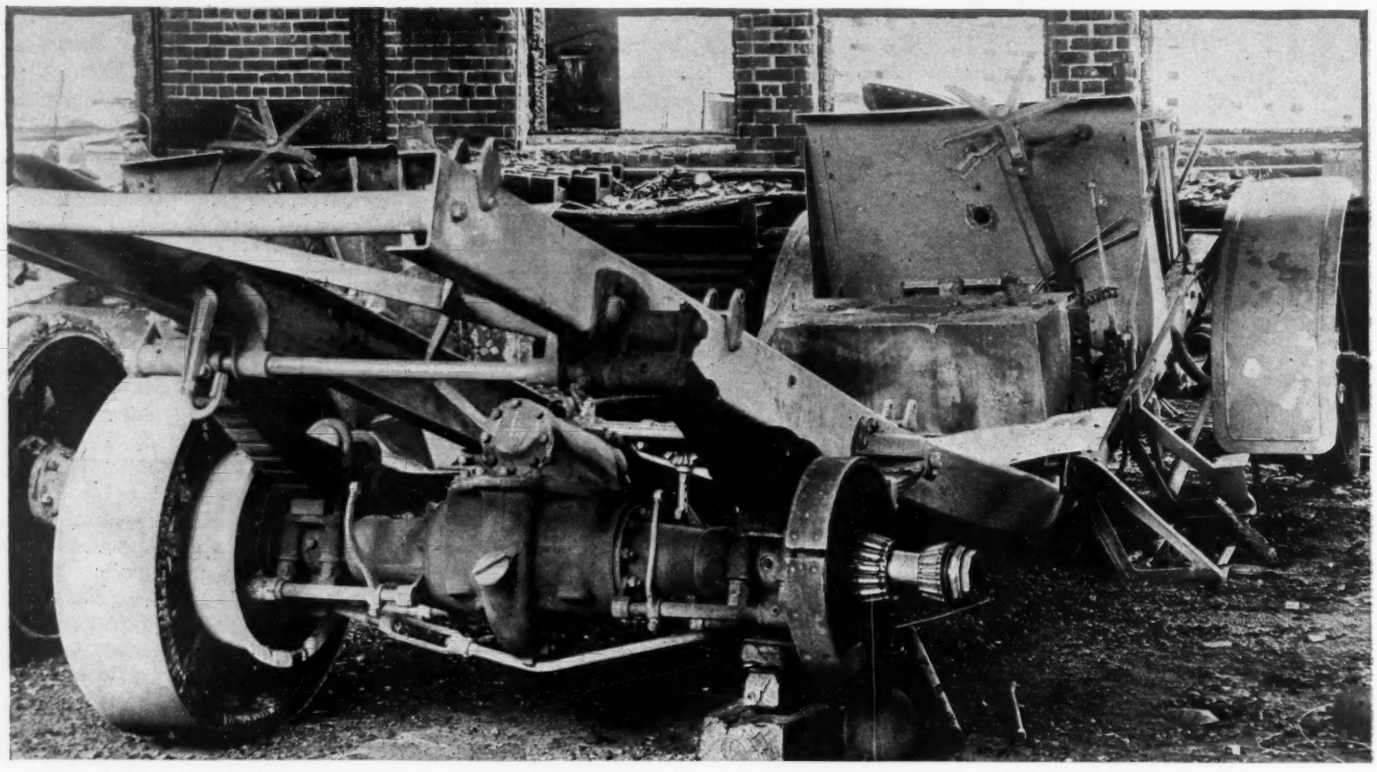
Tar Remover

There is available a liquid for removing tar or road oil from the varnished surfaces of the car. Asphalt or tar, if allowed to remain, will discolor the varnish and destroy the finish. The directions for use are as follows. After washing the car with soap and water, and removing all grit, saturate a piece of cotton waste with the liquid and apply it to the surface defaced. Allow it to stand for a few minutes and then rub thoroughly with the same piece of waste. Polish with cheesecloth, using long strokes with the grain of the varnish if possible. Cooper & Osterhout, Watertown, N. Y., are the makers and the prices are 50 cents per pint, $1 per quart; dealers, in case lots of 12 pints or 6 quarts, 30 per cent plus 5 per cent for cash.

Truss for Ford Axles

In a new device for Fords the rear axle is strengthened by a steel rod passing under the differential housing and clamped at each end to the rear axle. The device is claimed to take much of the strain from the central retaining bolts and to promote the life of the rear end assembly. It is easily installed and may be bolted in place by the owner. Hoyt's Auto Supply Co., 370 Fairfield-av, Bridgeport, Conn., is the maker and the price is $1.50.

Among the Makers and Dealers



BRAKE LINING RESISTS FIRE—This view shows the effect of the Atterbury Truck Co.'s fire at Buffalo, N. Y. Notwithstanding the heat was of sufficient intensity to warp the frame, the brake lining on these trucks was left in good condition, even though the temperature was estimated to be something over 1,500 degrees. Note how frame is warped and wood charred.

PEERLESS Plans Additions—The Peerless Motor and Truck Co., Cleveland, O., will add to its plant to take care of European orders for trucks.

Shortage of Material in Wisconsin—The shortage of pig and sheet aluminum supplies has forced several manufacturers of aluminum goods in Wisconsin to close down temporarily. Stocks are coming very slowly and little is to be had at any price, it is said.

Brussel Goes to Delco—M. Brussel, who has been with the Ferro Machine & Foundry Co., Cleveland, O., as general superintendent for the last 3½ years, has just resigned to accept a similar position with the Delco company, Dayton.

Bowser Occupies New Additions—On account of the rapid growth of the S. F. Bowser Co., South Bend, Ind., manufacturer of gasoline and oil tanks and pumps, several additions to the factory were necessary this summer, two of the three buildings having been just placed in use. The third will be completed in a short time.

Insurance Company Extends Territory—Extension of business to other states is the policy of expansion which has been adopted by the Indiana Automobile Insurance Co., Laporte, Ind. The company has been granted a license to write business in Illinois. The company is now carrying business on its books totaling more than $1,500,000.

Perkins-Campbell Adding—The Perkins Campbell Co., Cincinnati, O., has added 10,000 square feet to its factory to take care of the demand for seat covers, tire covers, engine and radiator hoods, tool rolls and other fabric lines. A second additional building with over 8,500 square feet is being rushed by the contractors and will be added to the Perkins-Campbell factories about September 15.

Kissel Adding Two Buildings—The Kissel Motor Car Co. is adding two more buildings to its plant at Hartford, Wis. When these are finished more than 60,000 square feet of floor space will have been completed during 1916. Still further expansion plants are under way.

Philadelphia-Maxwell Sales Promotion—The Philadelphia branch of the Maxwell Motor Sales Corp. has recently opened a sales promotion department, which gives the salesmen assistance in closing sales. The new department is in charge of L. S. Higham, who was formerly on the sales force in Philadelphia.

Briggs & Stratton Adding—The Briggs & Stratton Co., Milwaukee, Wis., one of the largest manufacturers of ignition and motor car specialties in the Middle West, started work September 1 on a new plant to cost in excess of $100,000. The main building will be five stories high, 60 by 220 feet, of fireproof construction, and is designed along the daylight factory plan.

Biddle Opens Export Office—The Biddle Motor Car Co., Philadelphia, Pa., has opened an export office in New York, and now is shipping cars to foreign countries. The company has a number of models, but is not specializing. President Maris states that a change of policy is being considered and that next year the cars will be sold through dealers. More expensive bodies will be used.

Falls Assembles in Tent—Temporarily to relieve the congestion in the plant and pending the completion of a new assembling shop, the Falls Motors Corp., Sheyboygan Falls, Wis., has erected a large circus tent in which assembling operations will be carried on night and day for at least 2 months.

Coming Motor Events

*September 9—Indianapolis speedway race.
September 16—Speedway race, Providence, R. I.
September 18—Track meet, North Yakima, Wash.
September 29—Track meet, Trenton, N. J.
September 30—New York, Sheepshead Bay speedway race.
October 7—Philadelphia speedway race.
October 7—Omaha speedway race.
October 14—Chicago speedway race.
October 19—Indianapolis speedway race.
October 21—Track meet, Kalamazoo, Mich.
*November 16—Vanderbilt cup race, Santa Monica, Cal.
November 30—Speedway, Los Angeles, Cal.
December 25—Speedway, Los Angeles, Cal.

*Sanctioned by A. A. A.

SHOWS

September 4-8—Hartford, Conn.
September (date undecided)—Cleveland.
September 25-30—Salem, Ore.
October 14-31—Dallas, Tex.
January 6-13—New York show.
January 13-20—Montreal.
January 27-February 3—Chicago show.
March 3-10—Boston.

The company added fifty skilled mechanics to the force during last week and is taking competent help as rapidly as it presents itself.

Greenfield Detroit Branch Discontinued—The Greenfield Tap and Die Corp., Greenfield, Mass., has discontinued its store in Detroit.

Form-A Motor Seeks Plant—The Curtis-Form-A-Tractor Co., Chicago, is negotiating with the business men's association of Green Bay, Wis., with a view to locating its permanent works and headquarters there.

Inland Ring at New York—The Inland Machine Works, Saint Louis, Mo., manufacturer of Inland piston rings, has opened an office in New York at 1777 Broadway, with D. F. Rose, as manager.

New McQuay-Norris Force—The McQuay-Norris Mfg. Co., St. Louis, Mo., has added three mechanical engineers to its sales force in the field. Herbert H. Cummings will be located in Chicago, Russell B. Pratt in Milwaukee, and Fred L. Stevenson in Detroit.

Waukesha Motor Plans Addition—The Waukesha Motor Co., Waukesha, Wis., is having plans prepared for a new administration building, to be of fireproof construction, 36 by 132 feet in size, two stories and basement. The completion of the new offices will release considerable floor space for manufacturing purposes, which is badly needed because of the great rush of orders.

Iowa Tire Gets Factory—The Iowa Rubber Tire Co., recently organized, has decided to locate its plant in Bettendrof, a suburb of Davenport. A tract of 10 acres has been purchased, and an option secured upon an adjacent tract of similar size. It was necessary to locate the plant close to the Mississippi river as 200,000 gallons of water will be consumed daily in the various processes of manufacturing tires. Ground will be broken November 1. An initial order for $100,000 worth of machinery has been placed. J. H. Roth, who recently resigned as vice president of the American Tire and Rubber Co., has arrived in Davenport to take active charge of the department of sales of the new concern.

Pettit Leaves Case?—Bertholf M. Pettit, for 3 years advertising manager of the J. I. Case T. M. Co., Racine, Wis., is reported to have resigned to accept an executive position in the Curtis Publishing Co. organization at Philadelphia.

Hinchcliff Leaves N. E. Winton—F. A. Hinchcliffe, for many years manager of the Winton Motor Car Co.'s branch at Boston, Mass., in charge of the New England district, has resigned to become agent for the Jordan car there. Some of the prominent men in the motor industry are identified with him in the venture.

Covert Vehicle Name Changed—The business of the Covert Motor Vehicle Co., Lockport, N. Y., was recently reincorporated as the Covert Gear Co., and its capital stock was increased to $1,000,000. It is erecting an additional factory building at a cost of over $50,000, and on completion about October 1 will devote it to the manufacture of its line of transmissions.

$500,000 Additions for Goodrich—The B. F. Goodrich Co., Akron, O., will erect $500,000 worth of new buildings in the next few months. One new factory building, south of the present factory No. 10, will cost $415,000. It will be six stories in height, and will be used for general factory purposes. An addition to factory No. 9 will cost $44,000 and another addition to No. 10 will cost $38,000. Both are one-story additions.

New Mitchell Agency at St. Louis—The Ebbeler Motor Car Co., St. Louis, has taken the agency for the Mitchell cars, giving an initial order for 500. The transfer from the Weber Implement and Auto Co. was made because the latter preferred to give attention to a car that has become a rival of the Mitchell. J. H. Little, in charge of Mitchell department for the Weber Co. goes to Ebbeler company in the same capacity. A. F. Jacobsmeyer of the Mitchell factory is installing a service department for the Ebbeler company.

Cadillac's New K. C. Home—The Greenlease Motor Car Co., Kansas City, Mo., is making preparations toward the erection of a building at the intersection of Gillham Road and HcGee Road which will cover 28,500 square feet, will cost at least $135,000. The building will be the new home of Cadillac cars and the Greenlease service station.

Barley Gives Color Option—The Barley Mfg. Co., Streator, Ill., has decided to paint all of the cars manufactured in the future, in accordance with the wishes of the buyers. A lengthy list of color combinations has been prepared which is submitted to patrons, and the tinting is completed as preferred. There is a wide divergence in color schemes as a result of this plan and the move is proving popular. Eight shades of gray; six shades of green; four shades each of blue, yellow, and red, and other tints, are offered. Orders have been secured beyond the capacity of the plant to fill. A shortage of help is a handicap, efforts to secure experienced mechanics proving disappointing.

Saxon to Have Larger Plant—Positive confirmation of the report that the Saxon Motor Car Corp, Detroit, Mich., is to build a new plant was obtained this week with the information that a 38-acre tract of land has been procured. It lies on the western side of the city and just outside of the present city limits in what is known as Spring Wells. It is a block north of Michigan avenue along the railroad. Work on the new plant is to start about October 1, and according to President Henry W. Ford, the new home will be about four times the size of the present quarters, having about 600,000 square feet of floor space. It is the aim to be in the plant by January 1.

Anniston, Ala.—J. C. Wheeler Motor Co.; capital stock, $10,000; incorporators, J. C. Wheeler, Ralph W. Garner and A. Sollie.

Boston, Me.—Central Garage, garage, repairing and dealing in motor cars; capital stock, $10,000; incorporators, A. F. Lambert, V. C. Lambert, E. B. Palmer.

Buffalo, N. Y.—Carle Motor Parts Co., motors, engines, machinery, motor cars; capital stock, $10,000; incorporators, J. F. Melia, A. L. Dixon, H. Carle.

Butler, Pa.—Independent Auto Co.; capital stock, $5,000; incorporators, J. N. Riddle, Carl F. Hoffman, H. A. Oswald.

Charleston, S. C.—Southern Air-Friction Carburetor Co.; capital stock, $5,000; incorporators, J. A. Staples, H. D. Leiding.

Chicago—Auto Truck Steel Body Co., to manufacture and deal in metal bodies for motor cars; capital stock, $10,000; incorporators, F. E. Kahl, V. M. Ross.

Chillicothe, O.—A. R. Benz Motor Car Co.; capital stock, $1,000,000; incorporator, M. F. McPadden.

Cincinnati, Ohio—The Edmon Accessory Co., to manufacture and deal in accessories; capital stock, $1,000,000; incorporators, Thomas C. Christie, Elmer A. Edmon, Gertrude C. Edmon, Grace C. Christie and Laurine Christie.

Cincinnati, O.—Murray Auto-Parts Mfg. Co.; capital stock, $25,000; incorporators, W. J. Murray and others.

Cleveland, Ohio—The American Auto Trimming Co., to do automobile finishing and trimming; capital stock, $100,000; Benjamin Gotfriedson, Frank Joyce, G. A. Coulton, F. W. Treadway and William H. Marlatt.

Columbus, O.—Columbus Yellow Taxi Cab Company; capital stock, $10,000 to $15,000.

Dallas, Tex.—King Motor Co.; capital stock, $5,000; incorporators, A. P. King, Cecil Casey, O. W. Shaw.

Des Moines, Ia.—Taylor Motor Co.; capital stock, $30,000; incorporators, C. W. Payne and L. W. Taylor.

Detroit, Mich.—Detroit Motor Sales Co.; capital stock, $25,000; incorporators, W. W. Speler, H. C. Speler, Paul Meyer and others.

Detroit, Mich.—Detroit Truck Co.; capital stock, $50,000; incorporators, J. M. Hibbard, F. L. Paterson, R. M. Brownson.

Detroit, Mich.—Armored Motor Car Co.; capital stock, $100,000; incorporators, W. S. Ross, W. C. Artz, A. L. Mancourt, H. W. Frost.

Dover, Del.—Blackstone Motor Co., to manufacture motor cars and accessories; capital stock, $100,000; incorporators, M. L. Rogers, L. A. Irwin, Harry W. Davis.

Glens Falls, Pa.—H. A. McRae & Co., Inc., motor car and garage business, to manufacture motors, etc.; capital stock, $25,000; incorporators, H. A. McRae, E. F. Marquette, P. C. Ford, Glens Falls, N. Y.

Indianapolis, Ind.—Carver-Gregory Garage Co., motor cars; capital stock, $5,000; incorporators, Edwin Carver, M. Gregory, G. G. Gregory.

Lawrenceville, Va.—Brunswick Motor Co., Inc.; capital stock, $10,000; incorporators, T. C. Coleman, E. W. Ligon.

Lockhart, Texas—Clear Ford Storage Battery Co.; capital stock, $10,000; incorporators, Albert A. and Otto Borchert and A. E. Lawrence.

London, O.—The London Auto Sales Co.; capital stock, $10,000; incorporators, Frank B. McKee, Ellen McKee, Lydia McCall, Arthur McKee and Charles F. McCall.

Louisville, Ky.—Columbia Motor Car Co.; capital stock, $10,000; incorporators, F. R. Hodapp, E. E. Miller, J. L. Saylor.

Louisville, Ky.—Whiteside Motor Co., to do a general garage business; capital stock, $20,000; incorporators, W. P. Callahan, A. H. Whiteside, B. H. Radebaugh.

Louisville, Ky.—Columbia Motor Car Co.; capital stock, $10,000; incorporators, F. R. Hodapp, E. E. Miller and J. L. Saylor.

Louisville, Ky.—Callahan-Whiteside Motors Company; capital stock, $20,000; incorporators, William P. Callahan, Addison H. Whiteside and Benj. H. Raudebaugh.

Memphis, Tenn.—Union Motor Car Co., to engage in general motor car business; capital stock, $40,000; incorporators, J. T. Fisher, L. M. Stratton, B. A. Bogy, Jack W. Gates, R. E. Spicer, W. M. Busteed, M. E. Finch.

Milwaukee, Wis.—Turbo Carburetor Co., to manufacture gasoline engine devices and specialties; capital stock, $10,000; inocrporators, I. M. Smith, M. L. Fykes, Gladstone Cherry.

Napoleon, Ohio—The Napoleon Crown Fender Co., to manufacture fenders; capital stock, $20,000; incorporators, G. M. Donnelly, William Rohrs, W. A. Beckelman, C. E. Donnelly and C. E. Tanner.

Nashville, Tenn.—Elliott Garage Co., to engage in general motor car business; capital stock, $1,000; incorporators, J. M. Cantrell, Chas. C. Forehand, E. O. Elliott, Annie P. Elliott, B. M. Robinson.

Newark, N. J.—Armstrong Rutherford; capital stock, $200,000; incorporators, Samuel Kahn, J. A. MacEwan.

Newberry, S. C.—Carolina Auto Co.; capital stock, $10,000; incorporators, T. T. Summer, J. W. Smith.

New York—Stephens' Service Stations, motor car garages, gasoline, lubricants; capital stock, $10,000; incorporators, G. Baur, V. C. Stephens, B. F. Stephens.

New York—Consolidated Auto Radiator Mfg. Co.; capital stock, $1,500,000; incorporators, G. Kuntzman, J. L. Sullivan, J. J. McGovern.

New York—White Motor Sales Co., to buy, sell and deal in motor cars, tires and accessories; capital stock, $50,000.

Nicholasville, Ky.—Nicholasville Motor Car Co.; capital stock, $2,000; incorporators, A. L. Wilder, W. D. Harris, W. P. Harris.

Norfolk, Va.—Marmon Motor Sales Corporation, Inc.; capital stock, $5,000; incorporators, S. F. Bayless, J. W. Coykendale.

Plainfield, N. J.—M. & L. Auto Co., to deal in motor cars and accessories; capital stock, $25,000; incorporators, R. C. McIntosh, N. D. Laughlin, R. N. Crane.

Philadelphia, Pa.—Austin Motors Co.; capital stock, $2,000,000; incorporators, Herbert E. Latter, Norman P. Coffin, Clement M. Egner.

Philadelphia, Pa.—Fibre Rubber Mfg. Co., Inc., to engage in the manufacture and sale of rubber goods and tires; capital stock, $1,000,000; incorporators, A. J. Sherman, Ferris Giles, J. S. Dorsey.

Philadelphia, Pa.—Rush Motor Truck Co., to manufacture motor cars; capital stock, $500,000; incorporators, Joseph M. Morelli, Emin Nageli Jr., Chas. I. Guerin.

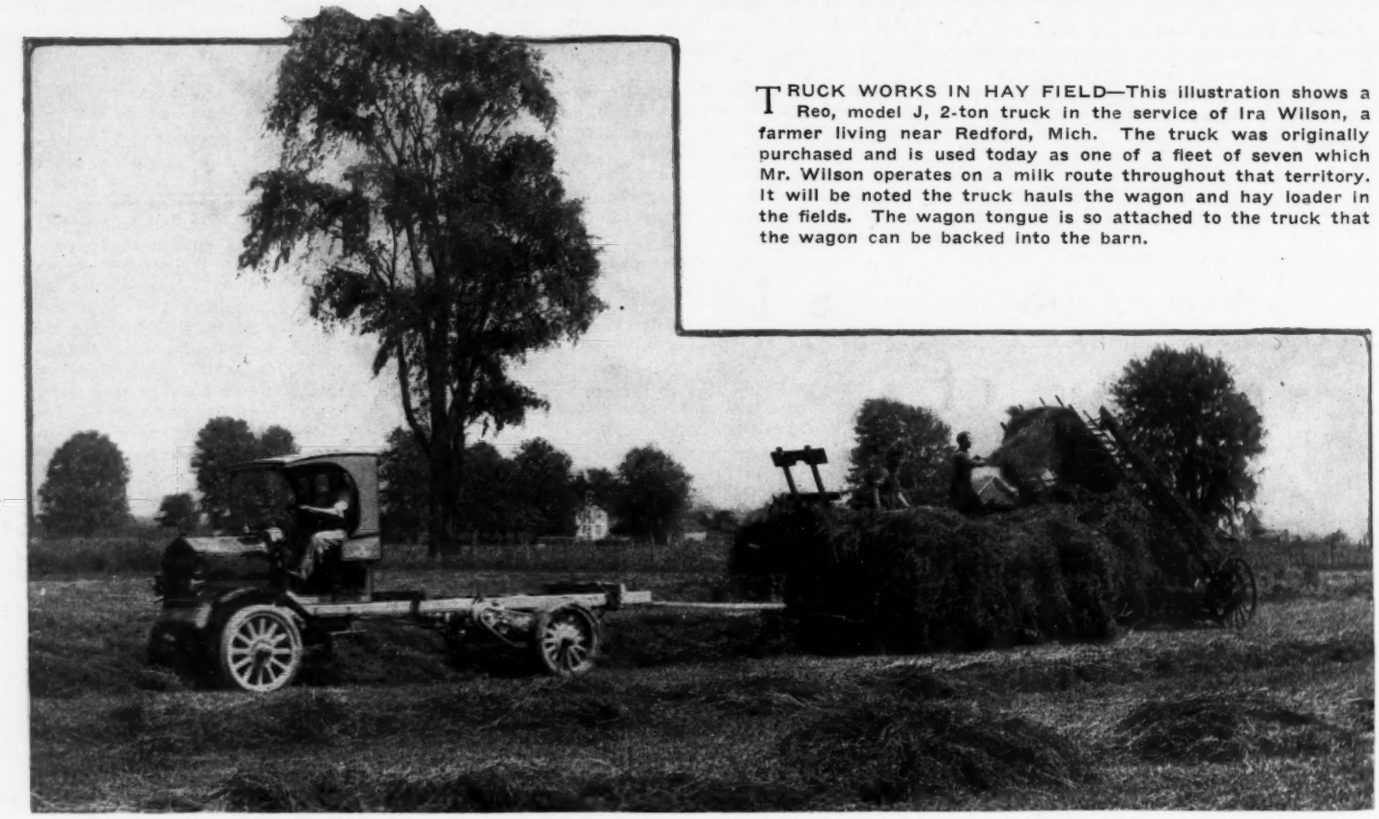
Philadelphia, Pa.—Victor Motor Co., to manufacture all kinds of motors, engines, etc.; capital stock, $2,000,000; incorporators, Regnault Johnson, C. V. Stahl, J. A. Neale, Philadelphia.

Richmond, Va.—Universal Motor Co., Inc.; capital stock, $50,000; incorporators, J. Jordan Leake, L. S. Schomberg.

Trenton, N. J.—Motor Compressor Sales Corp., to manufacture and deal in mechanical and electrical selfstarters; capital stock, $125,000; incorporators, Charles O., Geyer, Felix R. Smith, Gordon Grand.

Turtle Creek, Pa.—Westinghouse Garage and Supply Co.; capital stock, $1,600; incorporators, W. L. Cunningham, J. S. Cunningham, R. J. Cunningham, J. S. McFeatters.

From the Four Winds



TRUCK WORKS IN HAY FIELD—This illustration shows a Reo, model J, 2-ton truck in the service of Ira Wilson, a farmer living near Redford, Mich. The truck was originally purchased and is used today as one of a fleet of seven which Mr. Wilson operates on a milk route throughout that territory. It will be noted the truck hauls the wagon and hay loader in the fields. The wagon tongue is so attached to the truck that the wagon can be backed into the barn.

CLUB Has Police Chief Arrested—The Sunbury Automobile Club, Sunbury, Pa., had Chief Burgess Keyser and Street Commissioner Hetrick brought before the court on a charge of neglect of duty in failing to repair a street. Both gave bail for a further hearing and will present evidence to show that the borough is without funds.

Thief Steals Tools Only—A thief with a penchant for motor car tools and supplies has been raiding garages in the vicinity of Bridgeton, N. J. Only things peculiar to the trade have been taken. In one country garage over $300 worth of plumbers' and pipe fitters' tools lay in view and not one was touched, but motor car tools, tires, spark plugs and the like vanished. Chagrined garage men are arming to be ready for another visit.

Ohio Licenses 232,017 Cars—The report covering the present year up and including August 24 shows that there are 232,017 motor vehicles in Ohio. Since the first of the year the department has registered 224,700 individual gasoline cars and 4,443 electrics. During the same period dealers to the number of 2,874 have been registered. Now each dealer has at least one car and many of them have several demonstrators, but counting one car each there are 2,874 cars owned by dealers. Since the first of the year the department has made 4,553 transfers of licenses and tags, which number is not counted in the grand total.

Car Owners Ask Lower Ferry Fares—New Jersey motorists who have frequent occasion to cross into Pennsylvania have retained legal talent to apply to the public utilities commission for a reduction in the ferry fares for motor cars. It is claimed that the dividends of one big ferry company reach 36 per cent, and a reduction in charges is expected to follow the investigation and application to the commission.

Special Tax on Motor Buses—In New York every person or company operating a stage line over any part of the state or county highways must obtain permission for doing this from the public service commission. Furthermore, if any railroad or street railroad company has been taxed for the construction of any part of a highway used by the stages, their owner must pay a tax equal to 5 per cent of the amount contributed by the railroad companies.

Stop Engines When Taking Gas—Following a recent explosion, with injury to several persons, orders have been issued by the Standard Oil Co. to all patrons to insist that the engine of cars be stopped while the gasoline tank is being filled at the service station. Recently in Peoria, Ill., while a car was being supplied with gas, with the motor running, a spark from the motor ignited the vapor from the fluid and a serious explosion followed. The safety decree followed.

Good Roads Activities

Would Make Highway—Application has been made to the state highway department by William Jennings of the Pennsylvania William Penn Highway Association for permission to place the signs of the association along the highway route between Philadelphia and Pittsburgh and the Ohio state line.

Awaken to Need for Roads—Del Norte county, Cal., has awakened to the need of better roads. There is a bond issue on now and throughout the county farmers, timbermen and merchants are all talking good roads. For the purpose of developing the roads of the county, especially that part of the county highway system which is to be a link in the International highway, the coast road from Tia Juana, Mex., to Vancouver, B. C., a county good roads organization was perfected at a mass meeting held at Crescent City last week.

Puget Sound-to-Gulf Routing—It is now said to be practically assured that the route selected for the Puget Sound-to-Gulf highway will be via Austin, Tex., thence to Houston, instead of San Antonio and Corpus Christi as was originally proposed. The tentative decision to change the route was due to the bad condition of the road between San Antonio and Corpus Christi, it is stated. The placing of Austin upon this route will give that city the distinction of being located upon the Meridian highway, the Jefferson Davis Memorial highway and the Puget Sound-to-Gulf highway.

Oregon Realizing Road Necessity—Throughout the entire state of Oregon boosters for better roads are springing up. Oregon today is where California was with her highways 15 years ago. Oregon is rich in scenery and will be a mecca for motor tourists if the roads can be put in condition. Motorists who visit Oregon go away with nothing good to say for the roads. Realizing this, chambers of commerce and public spirited men all over the state are working on good roads movements and prominent men of Marshfield are planning the organization of an Oregon State Automobile Association. There is but one motor club in the state now and it is hoped to organize a state wide motoring fraternity that will aid in bringing motorists to Oregon and guiding them while in the state.